ENGINEERING NEWS-RECORD

The AGC's new president: Lester C. Rogers p. 99

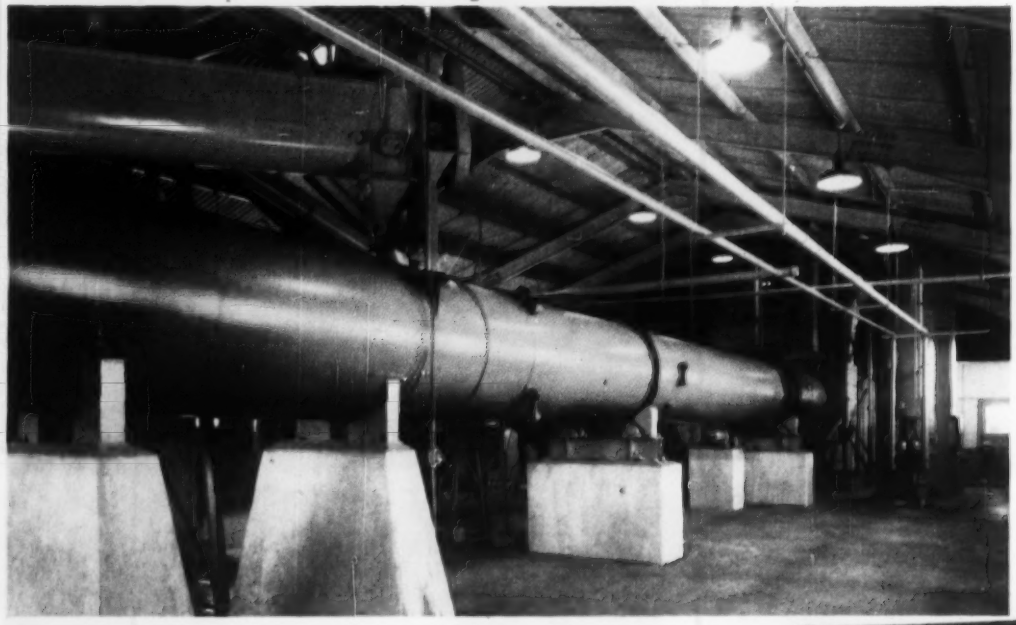
A McGRAW HILL PUBLICATION

R B POWER GS M
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

STANDARD HERSEY DRYERS...

solve Sludge Disposal problem

FOR Corpus Christi



STANDARD STEEL'S PUSH BUTTON PLANT SAVES SPACE, PRODUCES A MORE SALEABLE PRODUCT AND OPERATES MORE EFFICIENTLY AT HALF THE ORIGINAL COST OF OLDER CONVENTIONAL DRYERS. The equipment is compact... the original investment is lower by nearly one-half than for older style dryers... the operation can come on-stream quickly and easily and can be shutdown just as smoothly...these are a few reasons why more and more cities and municipalities are taking a close look at STANDARD-HERSEY Rotary Dryers.

The installation at Corpus Christi, Texas is a good example of the efficient all-weather, economical operation possible using Standard Rotary Dryers for handling sludge. Each of the two dryers installed there has a normal capacity of more than 1 ton of sludge per hour. Abrasion in duct work is much less with rotary dryers because of the lower speed of travel of sludge and because the sludge is not smashed into a powder and forced into a swift air stream. A saleable product of uniform particle size and non-dusting quality is the result of the gentler treatment in rotary dryers.

Investigate the many other advantages of this system for handling sludge and industrial wastes... write for more details.

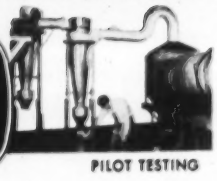
PUSH BUTTON OPERATION!

Every Standard-Hersey installation is under the complete control of a central control board. The operation is simple to understand—to operate.

STANDARD STEEL CORPORATION

5093 BOYLE AVENUE • LOS ANGELES 58
15 PARK ROW • NEW YORK 5

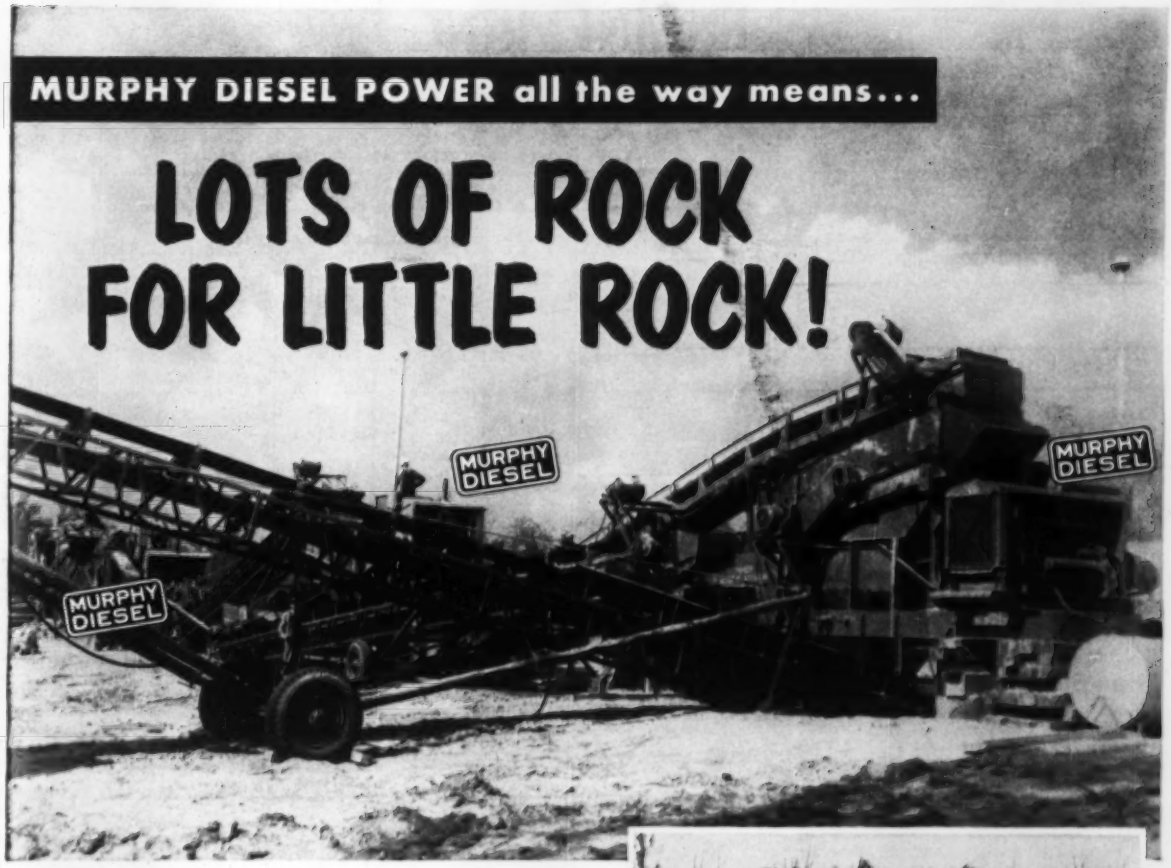
STANDARD HERSEY DRYERS



PILOT TESTING

MURPHY DIESEL POWER all the way means...

LOTS OF ROCK FOR LITTLE ROCK!



• It's Murphy Diesel Power throughout for producing aggregate with this equipment owned and operated by Reynolds and Williams, Little Rock, Arkansas. The crushing plant consists of a Pioneer 153 PRL primary, an SP-101 intermediate crushing and screening plant, and a 154 VE secondary roll crusher. At right angles to the secondary unit a 30-foot discharge belt leads to a separate bin. The crushing and screening units utilize Murphy Diesel Models 11, 20, and 22, while power for ten motors on conveyor and feeder belts is supplied by a Model 122, 135 K.W. generator set. The Murphy-powered Northwest Shovel shown at the quarry face is one of several owned by this producer. Photos were taken in the Reynolds and Williams quarry near Alpine, Arkansas.

Whatever the size of your plant, you want maximum output at minimum cost. It's yours with Murphy's greater fuel economy, longer trouble-free life and dependability unmatched by any engine of comparable size.

Check with Murphy Diesel owners in your area—we number them among our best salesmen. Let them tell you how Murphy has improved their profit picture. Then get together with your Murphy Diesel Dealer before you decide on an engine.

MURPHY DIESEL

392N

Heavy-Duty Power

for Construction

Murphy Diesel Engines and Power Units are available in sizes from 96 to 264 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units from 64 to 165 K.W.

MURPHY DIESEL COMPANY

5321 W. Burnham St. • Milwaukee 14, Wisconsin

Sales, parts and service throughout the nation

Symons FIELD REPORT...

Contractor Pours 200 Yds. Concrete in One Day with
SYMONS FORMS

17,500 square feet of Symons Forms with steel cross members were used to form curved walls, large pilasters and stepped footings on the new addition to St. Scholastica School in Chicago. Walls varied in thickness from 18 to 20 inches and in height from 9 to 10 feet. During one shift, from 8:00 a.m. to 4:30 p.m., the contractor was able to pour 200 yards of concrete. Overall size of the project is 190 x 190 and estimated cost is in excess of $1,000,000.

Symons engineers and sales representatives can show you how Symons Forms solve many specific forming problems. For example, from your plans our engineers will prepare a complete form layout and cost sheets—no charge or obligation. Also, Symons salesmen are competent to advise your work crews on most efficient, cost-saving methods of form erection and stripping.

Forms may be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. C-7, Chicago 39, Illinois.

Fred Berglund & Son, Inc., Chicago, Illinois, general contractor for St. Scholastica School job.

Catalogs and Added Information on FORMS—CLAMPS—SHORES Sent on Request

ENGINEERING NEWS-RECORD

EIGHTY-THIRD YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-6630

Waldo G. Bowman, Editor

Highways, Airports—Transportation

Eugene E. Halmos, Jr., *Senior Editor*
Edward M. Young, Jr., Joseph N. Todaro

Buildings, Bridges—Structures

Frederick S. Merritt, *Senior Editor*
James B. Sullivan, John P. Mahoney

Rivers, Sanitation—Water Use

Arthur J. Fox, Jr., *Senior Editor*
Howard Jacoby, Marc Leggiero

Finance, Labor—Management

Clyde C. Henning, *Associate Editor*
Charles J. Harding

Regional Editors

J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy, Presentation—Production

Stanley C. Jensen
Barbara Lamb
Harry W. Jensen, *Presentation*
Katherine A. Lacy, *Makeup*
John C. Greenough, *Printing*

Statistics, Prices, Costs—Business News

Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel
Marion Sciorra, Florence Dembek
James Webber, *Economics*
Ruth I. Carlson, Marie Roessler, Evelyn Huber
Ingeborg von Zitzewitz, *Unit Prices*

Editorial Research and Indexing

Helen Rich
Eva Glernt, Rene Hay
Patricia Witschger, Marianne Stern, Ruth Solomon

Consulting Editors: **Van Tuyl Boughton,** *New York*
Nathan A. Bowers, *San Francisco*

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, **John C.** L. Donaldson, Louis R. Eltscher, Jay Flocken, Boyd France, Samuel J. Justice, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, **Arthur** L. Moore, Norman B. Musselman, Andrew R. Patla, Seth T. Payne, **Travis** Dean Reed, Morton A. Reichek, Florence M. Reid, V. Craig Richter, **Caroline** W. Robertson, Vincent R. Smith.

Domestic News Bureaus: Cleveland News Bureau—1510 Hanna Bldg., Cleveland 15, Robert E. Cochran, Chief, William G. **Meldrum,** Michelle M. Perry; **Detroit News Bureau**—856 Penobscot Bldg., Detroit 26, Harry Homewood, Chief; **Pacific Coast News Bureau**—68 Post Street, San Francisco 4—Margaret Ralston, Chief, Jenness Keene, Sue Johnson, 1125 West 6th Ave., Los Angeles 17—John K. Shinn, Michael J. Murphy; **Seattle**—6040 Fifth Ave., N. E., Ray Bloomberg; **Southeastern News Bureau**—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Southwestern News Bureau**—901 Vaughn Bldg., Dallas, Kemp Anderson, Jr., Chief.

McGraw-Hill Economics Department: Dexter M. Keezer, director; W. H. Chartener

Foreign News Bureaus: Editor, John Wilhelm, **New York;** G. W. Schroeder, **Bonn;** Sharokh Sabavala, **Bombay;** William J. Coughlin, **London;** John H. Kearney, **Mexico City;** John G. Coppock, **Paris;** Dan Kurzman, **Tokyo;** Peter Weaver, **Rio de Janeiro.** Correspondents: Amsterdam, Athens, Bangkok, Bogota, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran and 21 other principal cities and countries.

Correspondents: In 77 principal cities in the U.S. and possessions and the Dominion of Canada.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 158, No. 12, March 21, 1957

Published weekly by McGraw-Hill Publishing Company; James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change of address. **Executive, Editorial, Advertising and Circulation Offices. McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on unsubscribed orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 35 cents. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

© Copyrighted 1957 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330W. 42nd St., New York 36, N. Y.

2½ CU.YD. —and R-E-A-C-H

Out there isn't it?

In fact it's over 50 ft.! These Northwest 80-D and 95 Pullshovels have tremendous capacity (2½ cu. yds.), enormous reach and they can dig deep.

When you are up against jobs that are Big, Deep, Wet and Troublesome there is one thing that counts more than anything else. That is a machine's ability to stay on the job! To make money you have to have equipment with the qualities that will assure you steady hour in, hour out, operation.

Northwest Pullshovels have proved their ability. Northwest Crawlers stand up in miles of travel. Rugged cast steel machinery bases with cast steel machinery side frames take the loads of digging and maintain shaft alignment and reduce wear. The "Feather-Touch" Clutch Control reduces the fatigue of operation—gives greater output without resorting to complicated and delicate valves, tubing, pumps and compressors. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging, make spotting the load easier and reduce spillage at the truck.

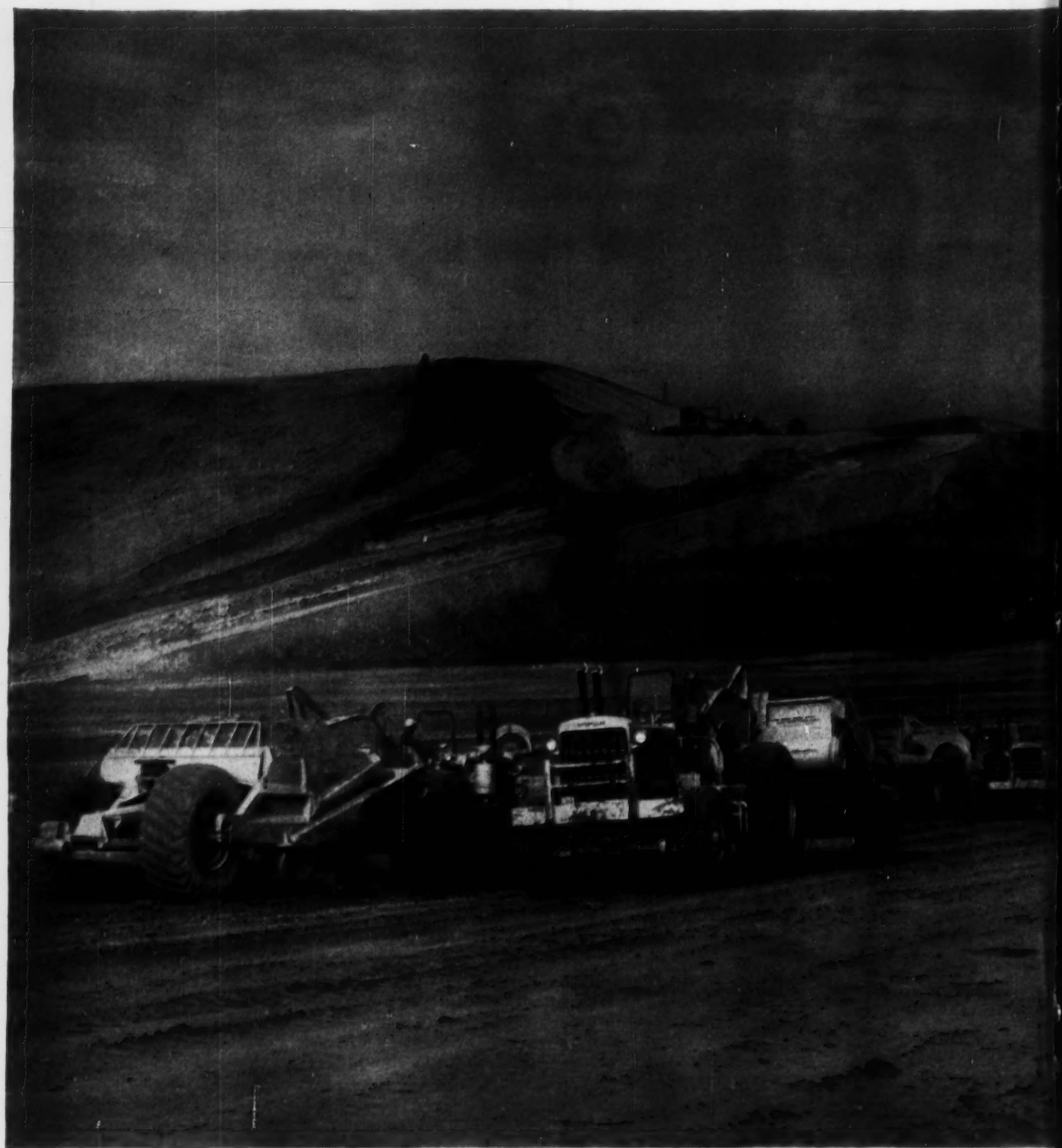
These are just a few of the advantages you should have. Advantages that make money. Ask a Northwest Man to bring you up to date on the latest Northwest features.

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

NORTHWEST

THE GREATEST COMBINATION OF PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE, DRAGLINE OR PULLSHOVEL

"We're moving 30,000 yards a day--



TUNE IN:
METROPOLITAN
OPERA
radio broadcasts
every Saturday afternoon

TEXACO

TEXACO

...and that Texaco Plan certainly helps"

—says Project Manager Floyd Helm

Part of M-W & W's equipment task force that includes 29 scrapers and 20 dozers at work on 1.75-million-yard cut being made at a 30,000-yard-a-day rate. All equipment is 100% Texaco-lubricated and fueled.

Mr. Helm heads all field work for this joint venture of McCammon-Wunderlich Co. and Wunderlich Contracting Company. *The job:* construction of 4.9 miles of highway (relocated U.S. 40)—part of the approaches to new bridge across Carquinez Straits, California. All equipment is 100% Texaco-lubricated and fueled.

"Toughest part of this job," says Mr. Helm, "is a 1.75 million-yard cut. We're trying to keep blasting to a minimum and our rippers and scrapers really have a rough assignment. We're moving some 30,000 cubic yards per one-shift day and we couldn't do that if our equipment wasn't staying right on the job. That Texaco Simplified Lubrication Plan certainly helps. Our maintenance crew can handle all major lubrication with only six lubricants—no waste motion, no mistakes—and those Texaco Lubricants really stand up. We haven't had a single equipment failure due to lubrication."

THE SIX LUBRICANTS THAT M-W & W USE

For engine lubrication: *Texaco Ursa Oil Super Duty Special*—especially refined and processed to make engines deliver more power with less fuel over longer periods between overhauls.

For chassis and general grease lubrication: *Texaco Marfak*—stays in the bearings and gives long lasting, extra protection against wear and rust.

For wheel bearings: *Texaco Marfak Heavy Duty*—seals itself in, seals out dirt and moisture, requires no seasonal change.

For hydraulic units: *Texaco Regal Oil R&O*—keeps systems free from sludge, rust and foam.

For wire rope and open gears: *Texaco Crater*—keeps rope strong longer, assures smoother operation and longer gear life.

For enclosed reduction gears: *Texaco Gear Lube HD*—protects against wear under heavy loads, keeps gears running smoothly.

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your projects. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N.Y.

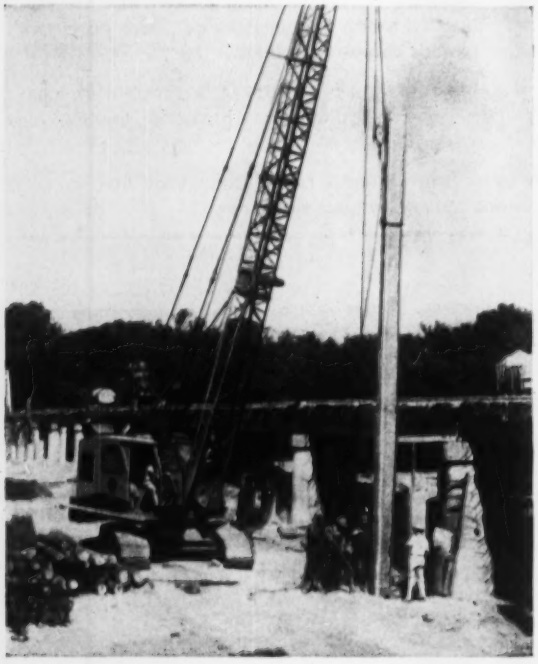
Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

KOEHRING WORK CAPACITY *in action . . .*

Take another look at this Mid-West quarry operation. It introduces the ¾-yard 305 — latest in a new series of Koehring heavy-duty excavators and cranes. Better check its all-around versatility and *extra work capacity* for digging, lifting and material-handling (more details are listed below).

On 13.4-mile highway contract in one of the central states, 1,500 to 2,000 tons of aggregates were handled daily by Koehring 605 clamshell crane. Its wide work-radius speeded stockpiling, and charging into Johnson bin. Contractor also maintained fast schedule at other end of job, where two Koehring 34-E *twinbatch*® pavers poured 24-foot concrete pavement, 9 inches thick.



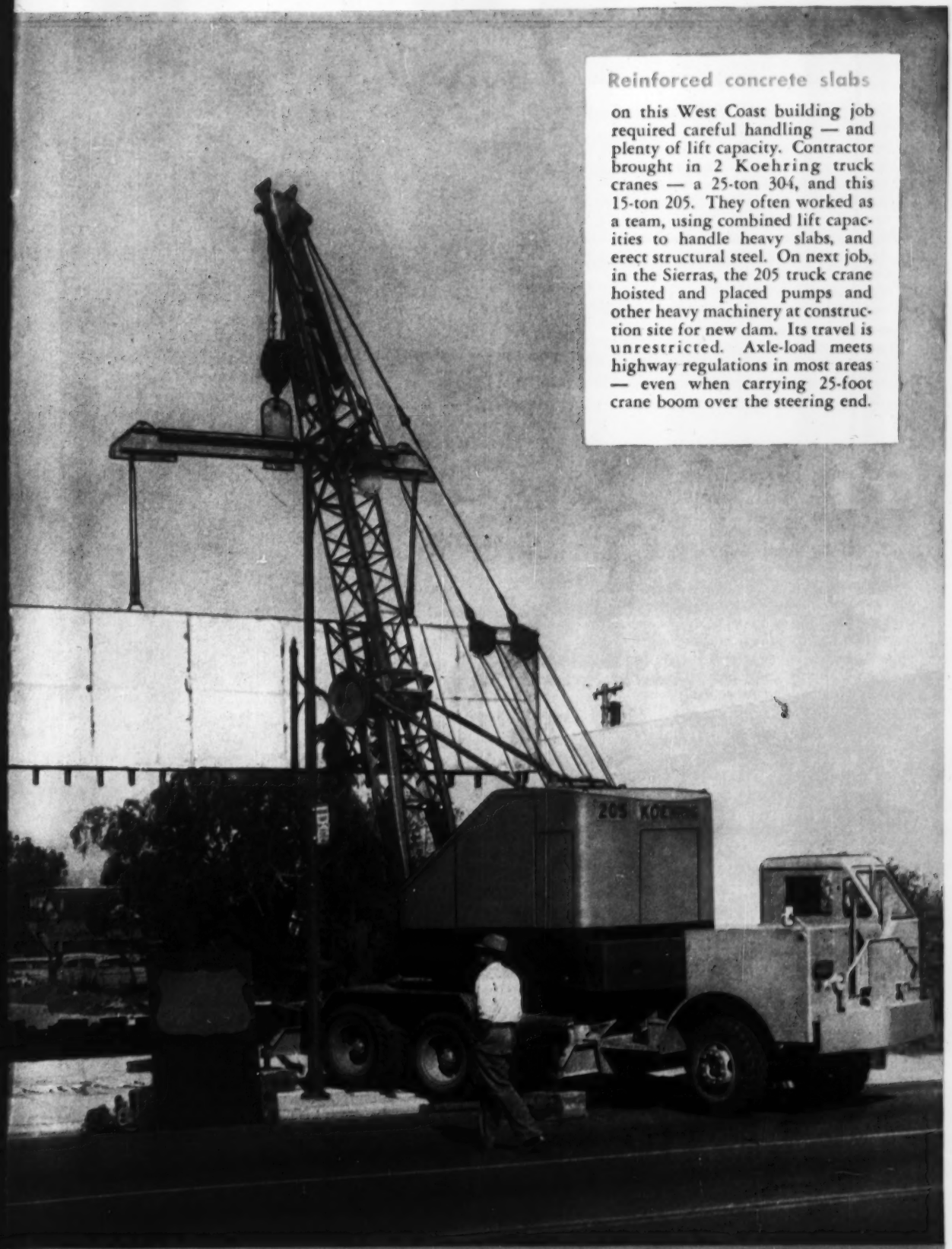
To eliminate a bottleneck on this highway widening job, it was necessary to rebuild bridge, and widen the approaches. Concrete pilings were set and driven by Koehring 405 crane. It has up to 20-ton lift capacity, boom lengths from 40 to 90 feet. Or, for maximum reach, 80-foot boom can be used with 15 to 30 feet of jib.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	½-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius

K831

Want more information? Call Koehring distributor today.



Reinforced concrete slabs

on this West Coast building job required careful handling — and plenty of lift capacity. Contractor brought in 2 Koehring truck cranes — a 25-ton 304, and this 15-ton 205. They often worked as a team, using combined lift capacities to handle heavy slabs, and erect structural steel. On next job, in the Sierras, the 205 truck crane hoisted and placed pumps and other heavy machinery at construction site for new dam. Its travel is unrestricted. Axle-load meets highway regulations in most areas — even when carrying 25-foot crane boom over the steering end.

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

AMERICA'S INVISIBLE GIANT...

is the great, far-spreading and fast-growing aggregate industry!

It is the *indispensable* service industry to all construction projects. In 1957 more than $40,000,000,000 will be spent on public, private and Government construction projects. A large part of this huge expenditure will go toward the purchase of *aggregates.*

Vulcan Materials Company is a part of this mammoth, but little-known industry that is growing as America grows. Our purpose is to serve . . . to work with the people who build and construct . . . to provide the needed products and the service to complete every job on schedule.

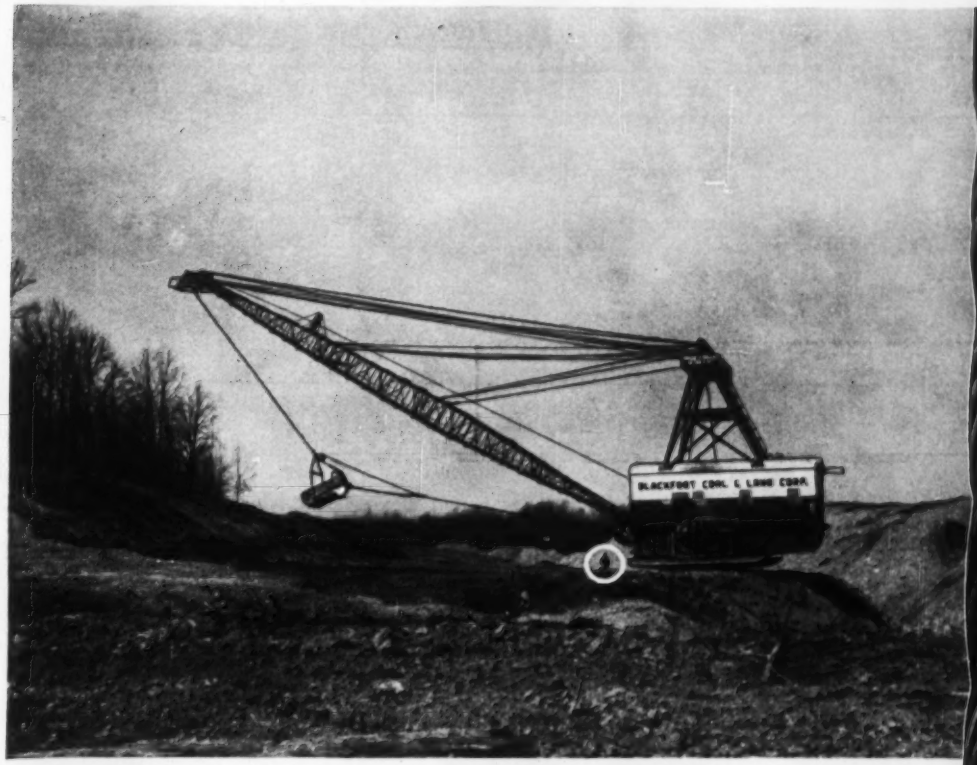
"Wherever you see a bridge . . . a giant dam . . . glistening railroad tracks . . . a busy airport . . . a mighty canal lock . . . the ribbons of asphalt and concrete highways . . . there, you see the results of our vast, quietly-working industry. We are proud to be a part of it. We are expending every effort, making every investment to increase our stature in it . . . and in its contribution to our nation's growth and prosperity."

A. W. Ireland
President

VULCAN Materials Company

2019 Sixth Avenue, N., Birmingham, Ala.

Birmingham Slag Division
Southern Cen-Vi-Ro Pipe Corp.
Kennesaw Stone Company
Drummond Trucking Company
Vulcan Detinning Division
Stockbridge Stone Company
Montgomery-Roquemore Gravel Co.
Atlanta Aggregate Division



50% Longer Life from VHS Dragline
. . . at Blackfoot Coal and Land

• Mr. Henry Fitch, Superintendent of Blackfoot Coal and Land Corporation, Oakland City, Ind., says: "The two ropes on our Bucyrus-Erie 500W Dragline normally lasted only from 1½ to 2 months—even though we used the best Improved Plow Steel lines we could get. We were pleasantly surprised when our first VHS line lasted over 3 months—an increase in service life of well over 50%. Naturally, we are using VHS from now on out."

New Grade of Steel

VHS is setting service records like this on draglines, shovel hoist ropes, and scraper cables all over the country. Made from a new grade of steel for wire rope, it is at least 15% stronger than IPS—the strongest grade formerly available. This means you can handle heavier loads with the same diameter line. And you get a higher factor of safety.

Cuts "Down Time"—Saves Money

New VHS is not only stronger, it is tougher, too. It resists abrasion . . . keeps its shape under pressure . . . can't become "hidebound" or lose its flexibility. It lasts longer in the toughest applications . . . such as draglines, shovel hoist ropes, and scraper cables.

The longer life you get with VHS saves you money. And you make more big savings by cutting "down time" of equipment for wire rope replacement.

At Your Distributor Now

Your distributor has scraper cables, draglines, and shovel hoist ropes of new LAY-SET VHS in stock now. Just call him and tell him the size and diameter you want. You don't need any complicated specifications.

For more information see your Hazard distributor salesman or write to the nearest Hazard office for Bulletin DH-513H

HAZARD WIRE ROPE DIVISION
American Chain & Cable Company, Inc.

LAY-SET VHS

15% Stronger • Tougher • More Wear-Resistant

HOW TO RUB or GRIND CONCRETE

Today, more and more builders specify a fine finish for concrete walls and ceilings. Because of this new requirement, and of the time and expense involved for hand finishing large areas, Stow Manufacturing Company has developed two, easily portable flexible shaft grinders for finishing concrete. These grinders are electrically powered.

Two methods are used to smooth off hardened concrete: wet rubbing and dry grinding. Wet Rubbing — required for smoothing green concrete to a plaster-like finish. Use slow speed grinding wheel or disc. Apply water while grinding. Wet concrete can also be painted on with a brush, then smoothed into holes with the grinding wheel. Dry Grinding—use a high speed grinding wheel or abrasive disc to smooth dry concrete.

Either of Stow's portable electric grinders, the ½ HP model G40-C or the ¾ HP model JT-50, can be used for wet or dry grinding. Both models are available with open or totally enclosed motors, and are equipped with 8 or 12-ft. flexible shafts. Angle heads with different speed ratios can be selected. Write for STOW's pamphlet, Grinding Concrete for complete information on proper speeds, grinding discs and wheels for both wet and dry concrete finishing. Stow Manufacturing Co., Binghamton, N. Y. also makes a complete line of concrete vibrators, rotary trowels, and screeds.

STOW MANUFACTURING CO.
19 Shear St., Binghamton, N. Y.
Please send me your pamphlet, GRINDING CONCRETE.

Name..... Title.....

Company.....

City..... Zone.... State.....

Reader Comment

Tay Bridge Probers Wrong

SIR—In your editorial, Jan. 17, p. 128, on the Tay Bridge disaster of 77 years ago, you base your views on a book, "Disaster at Dundee," recently published, which may be termed a popular description of this disaster.

Many years ago, as an engineer interested in the effects of wind pressure, I read the voluminous report of a Royal Commission inquiry held at the time. You should do the same if you want to gather the true lesson.

In the light of modern investigation into wind pressures, it would not appear that the structure itself failed from this cause. At the time of the inquiry Benjamin Baker, who did, in fact, later design and construct the well-known Fourth Bridge, was strongly against an exaggerated view of wind pressure, although he was in a brave minority of one. He carried out in court an interesting experiment by loading up windows from various exposed places in the neighborhood and showing that they all failed at 10 to 12 psf, and yet on the night of the disaster these very exposed windows had not suffered damage.

Somewhat sarcastically, you say that the engineer, if he had "a little more interest in things outside the narrow confines of his own experience" would have known that 50 psf was common practice then in both France and America. The question is: Has that not been scaled down considerably since then?

As a result of the findings of the inquiry based on this erroneous idea of wind pressure, the law for wind pressure in Great Britain became then 56 psf and was a considerable hindrance and expense in the design of structures for many years. At the beginning of World War I, there were attempts to design hangars in that country for wind pressures of this order. It could not be understood how the Germans were managing with lighter constructions, until it was found that they were designing them for about 9 psf. After that there was a more enlightened angle on wind pressures, which have now been considerably scaled down as a result of wind-tunnel experiments.

It is of interest that all double-deck buses in Great Britain would blow over at 15 psf wind pressure. Fortunately, they rarely do this.

The most likely thing on the Tay Bridge is that a light railway carriage under a wind pressure of 10 psf or so, lurched and broke on the cast-iron joints of the bridge, thus causing its collapse. The engineer was not responsible for the running of the train onto the bridge, and to that extent, should not be held responsible.

I think that the findings of the commission, which are more or less what you repeat, are a typical case of there being too many causes of disaster brought up—meaning that the commission never really found the one true cause. Since you have based your article on a popular book and not on a technical analysis of the report of the commission in the light of present knowledge, you are not doing the engineer justice.

I came to the conclusion that the commission's findings were totally wrong and that in the search for a scapegoat, they suggested every possible error, but did not pinpoint the real cause. Surely that is the lesson to learn.

SIR OWEN WILLIAMS
Consulting Engineer
Sir Owen Williams & Partner
London, England

Credit Omitted

SIR—In your article entitled "BPR Publishes Bridge Standards" (ENR Jan. 24, p. 45) credit should have been given to the consulting firm of Robert W. Lowry, Inc., for being responsible for the preparation of standard bridge plans for the Pennsylvania Department of Highways.

MYRON LEPKALUK
Vice President and Chief Engineer
Robert W. Lowry Inc.
Harrisburg, Pennsylvania

Philadelphia Parking Plans

SIR—My attention has been directed to an item appearing on page 6 of your issue of Oct. 26, 1956, concerning Philadelphia's latest actions in connection with its parking garages. For the record, it seems to me this item is misleading.

The implication in the headline that the city will give up its "public parking business" is incorrect, since there will be no change in either ownership or principle of operation. The fact of the matter is that since the first few months

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

IT'S CONSIDERATE OF YOUR CRANE OPERATOR'S TIME, AND YOUR MONEY, TOO!

the single mechanism moves fast with light load, slow with heavy load...

The new hoisting concept employed in this Paceco Dual Torque Crane reduces first cost, lowers maintenance costs and increases operational efficiency.

The Paceco Dual Torque Crane operates at high speed with light load and low speed with heavy load—with many speed steps in between. This flexible operation is performed by *one* hook*, *one* trolley hoist and *one* set of electrical controls utilizing a magnetic amplifier in conjunction with a weakening of the field in the hoist motor. Accurate speed control is *entirely independent* of loads.

The simplicity of the Paceco Dual Torque design reduces first cost and lessens maintenance. The variable hoist speeds save time in placing hook for lifting, speeding hook movements as much as 5 to 1.

Speed of movement of load is instantly regulated by merely pushing a button. For precise placement of heavy loads, this extremely flexible speed control tends to reduce anxiety on the part of the crane operator.

By using a single hook and a single trolley hoist in place of a double hoist trolley, operators benefit by closer hook approaches to the runway rails and an expanded working area under the crane. The Paceco Dual Torque mechanism may be used on both gantry and bridge cranes.

Besides cranes, Paceco designs and fabricates gates, hoists and other similar types of major mechanical equipment. May we send you our illustrated brochure on such products?

PACECO
"TAILORS OF STEEL"®

PACIFIC COAST ENGINEERING COMPANY
ENGINEERS • MACHINISTS • FABRICATORS
Alameda, California, LAkehurst 2-6100

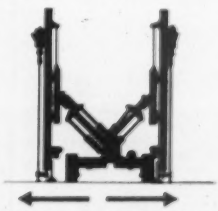
PACIFIC COAST ENGINEERING CO., INC.
New York 17, 51 East 42nd Street, OXford 7-1475
REPRESENTATIVES
Pasadena 8, Calif., 3018 E. Foothill Blvd., RYan 1-9373
Kansas City 12, Mo., 4706 Holly Street, PLaza 3-3737
Houston 2, Texas, 3619 Robinhood, MOhawk 3504

*Auxiliary hook shown in photograph is a low cost, special added unit for the single purpose of lifting turbine heads in the steam plant it serves. †Patent applied for

Announcing the

A Completely New, Crawler Drill at its

NO OTHER CRAWLER DRILL SO COMPLETELY POWERED... SO FAST AND EASY TO SET UP... SO SAFE TO OPERATE!



1. Hydraulic Boom Swing of 9'11" gives maximum usable hole pattern with a single crawler setup and permits line hole drilling along a face over the tracks.

SUPER-POWER D-45 DRILL

HYDRAULIC TOWER LIFT

POWER FEED-TOWER ADJUSTMENT (5 ways)

HEAVY-DUTY BOOM

CONVENIENT CONTROLS

RUGGED CRAWLER ASSEMBLY

FEED-TOWER FOOT PAD

MAXIMUM FLEXIBILITY WITH COMPLETE SAFETY

FOR A PACE-SETTING DRILLING COMBINATION,

Ingersoll-Rand

CRAWL-IR

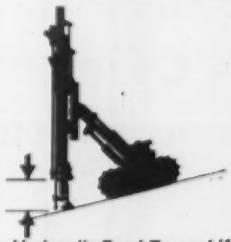
Completely Mechanized

RUGGED BEST!

2. Hydraulic Boom Lift raises and lowers booms in vertical plane—covers distance of 7'3" with tower in horizontal position.

3. Hydraulic Feed-Tower Tilt sets feed tower at any angle.

4. Hydraulic Feed-Tower Swing sets tower for vertical drilling on any slope—or positions drill for horizontal holes at any angle to crawler travel.



5. Hydraulic Feed-Tower Lift slides feed tower up or down, in or out—permitting foot pad to be set firmly on the ground.

HERE, in one unit, is a completely mechanized and self-propelled heavy-duty crawler drill that will greatly expand the scope of Wagon Drill operations. With *all* boom and feed-tower adjustments hydraulically controlled, you can make faster, safer and easier setups for drilling in *any position*. And because the CRAWL-IR can tow its own portable compressor, you save manpower and release auxiliary equipment generally required to move drills and compressors on the job.

The following advantages and features make this the fastest-acting, easiest drilling and safest unit of its type ever developed. It can be supplied with percussion or rotary drills, and with a wide range of optional hydraulic combinations when all of the power features are not required. Ask your I-R representative for complete information on this new self-propelled blast hole drill—or send for a copy of Bulletin No. 4189.

ADVANTAGES

SELF-PROPELLED — The CRAWL-IR is powered by two independently controlled heavy-duty piston type I-R air motors. Knee-action frame construction permits these motors to take the crawler over rugged terrain.

SPEEDS SETUPS — Five hydraulic cylinders quickly and safely position and lock the feed-tower in position by manipulation of convenient controls located on the boom base.

FAST STEEL HANDLING — Reverse rotation in the powerful D-45 drill when used with coupled steel provides a convenient and easy method of adding and removing steels in a hurry. The D-45 also incorporates release rotation which permits hammer action on the steel for loosening joints and fighting stuck steels.

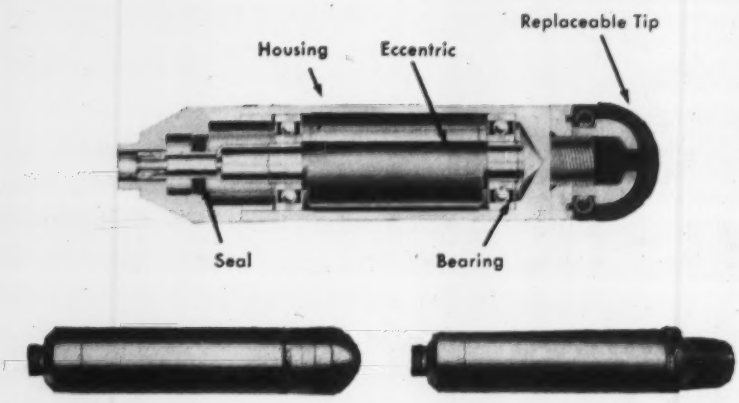
MORE DRILLING TIME — The bulk of the time formerly spent on conventional Wagon Drills in moving, hand wrench time and steel handling is now turned into drilling time. With the drill positioning completely mechanized one man operation is entirely feasible.

Ingersoll-Rand

11 Broadway, New York 4, N.Y.

6—813

POWER THE **CRAWL-IR** WITH A **GYRO-FLO** COMPRESSOR



SIMPLE DESIGN — Short head Viber vibrators are simple in design and have few parts as indicated in cut-away picture above. Head assembly with replaceable rubber tip is shown at left. Assembly with 3-finned steel-cast tip at right.

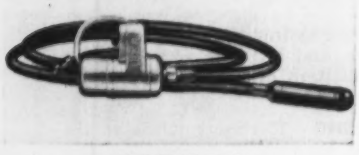
Short Head Viber Vibrators Offer Major Advantages in Placement of Concrete

VIBER VIBRATOR heads are short, easy to manipulate—simple, easy to maintain. Simple construction of the Viber head makes a compact assembly which maneuvers easily around steel and into awkward, hard-to-reach places.

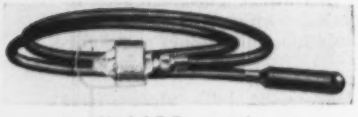
The Viber design utilizes a single eccentric weight in a heat-treated alloy steel housing. Other parts are one bearing at each end of the weight and a grease seal. Viber patented replaceable rubber tip is standard equipment, with 3-finned steel cast tip optional.

Viber heads are light weight, ranging from 6 to 16 pounds... 11 to 12 inches in length and are available in four diameters—1¾ in., 2⅛ in., 2½ in. and 3 in.

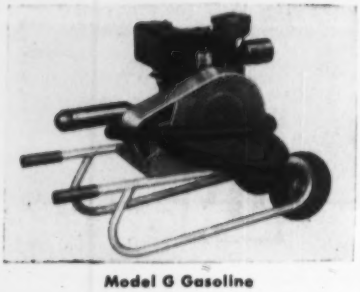
Flexible shaft driven, Viber vibrators are powered by electricity, gasoline or air... easily adapted to varying job conditions. They are high speed, operating at speeds between 8500 and 11,000 rpm.



Model E Electric



Model P Pneumatic



Model G Gasoline

Viber Replaceable Rubber Tips

Viber rubber tips save contractors thousands of dollars yearly by preventing damage to forms of plywood and other expensive materials. In addition, since most wear on a vibrator occurs on the end of the housing, use of replaceable rubber tips greatly extends housing life.

Viber vibrators are effective. More work can be done in less time and with minimum danger of damage to forms by using the high speed low amplitude type of vibrator pioneered by VIBER.

For complete information on Viber vibrators and address of nearest distributor, write Viber Company, 726 South Flower St., Burbank, Calif. Dept. 16E3.

VIBER

VIBRATORS SINCE 1931

. . . Reader Comment

back as about 1950. The idea was discarded after the one ambitious attempt.

I spent almost two years with the Freyssinet organization in Europe and am helping to pioneer prestressing here in the Far East. Already, I have finished a 54 ft span motor workshop floor. Also nearing completion is a unique 3 story steel-framed addition to an existing 4-story building. In this, I used precast, pretensioned floor units screeded over.

DONALD K. GUDGEON
Consulting Engineer
Singapore, Malaya

Help High School Teachers

SIR—An important aspect of the engineering manpower problem that was mentioned in your Nov. 8, 1956 issue is the short supply of high school science and mathematics teachers. Many who have thought that this could easily be remedied have bumped into a seemingly immovable obstacle—the unwillingness of school superintendents and school boards to risk the wrath of the majority of the high school teachers by proposing a higher pay scale for science and mathematics teachers. D. A. McGee takes note of the situation in his article in the November, 1956, issue of "Geo times".

It seems to me that many ENGINEERING NEWS-RECORD readers might be in a position to do something about this, not by putting pressure on school superintendents or local school boards, but by getting acquainted with the high school science teachers and finding some way to help them. For example: offering them interesting and well-paid summer jobs. It would be necessary, of course, to have an understanding that the jobs were only for the summer, else the teachers might want to quit teaching.

C. J. POSEY
Professor and Head, Civil Engineering
State University of Iowa

Money Isn't Everything

SIR—The Jan. 31 issue of ENR contains an article "Precast Arches Form Gym Roof." The Westmoor High School Gym described appears to have an excellect structural solution.

There seems to be a pathological tendency to claim economy as an automatic attribute when we use one type of construction in preference to another. We are endlessly proving that steel is cheaper than concrete and that concrete is cheaper than steel.

Here we have an article describing a well-executed, clean, interesting building, most satisfying in design, appear-

NOW...IN ROLLS

CLEARPRINT "FADE-OUT" PAPER

Clearprint "Fade-Out" Paper is especially well adapted for heating, wiring, plumbing and electrical diagrams...for structural and architectural drawings.. for plant layouts and tool designs. See how Clearprint can reduce your drafting time and costs. Order a trial roll now, and apply it to your various needs.

Make This Convincing CLEARPRINT TEST

1. **INVITES PENCIL AND PEN** — Try Clearprint's perfect working surface with a 2H pencil, then with a ruling pen. Lines are sharp and clean — no feathery edges.

2. **ERASES PERFECTLY** — Erase some of the lines. Redraw and erase several of them repeatedly. Crease the paper, too. Then hold it to the light and notice the absence of grid lines and ghosts.

3. **NO GRID, NO GHOSTS ON PRINTS** — Make a quick print of the sheet. The original is faithfully reproduced, clean and easy to read, without erasure ghosts or cross section rulings.

THERE'S A CLEARPRINT PAPER FOR EVERY JOB

ASK FOR COMPLETE SAMPLE BOOK

IN SHEETS, PADS and ROLLS

AVAILABLE in ROLLS up to 42" wide, and in SHEETS of any specified size. RULINGS 8 x 8 and 10 x 10 lines to the inch with inch lines heavy.

PRINTED on Clearprint Technical Papers:

No. 1000H — 16 lb. weight
No. 1020 — 20 lb. weight

SEEING is BELIEVING!

Ask your dealer for samples, or send coupon

CLEARPRINT®

"FADE-OUT" PAPER

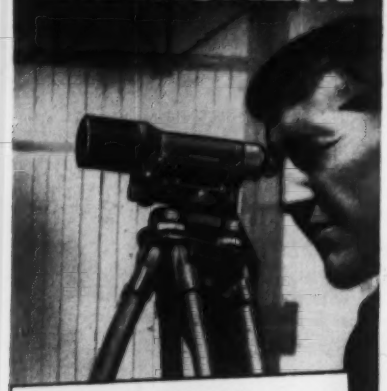
THERE IS NO SUBSTITUTE — Demand Watermarked Clearprint

CLEARPRINT PAPER CO. EN
1482 - 67th St., Emeryville, Calif.

- ☐ Please send me sample Clearprint "Fade-Out" sheets, with prices.
- ☐ Send me Clearprint samples, with prices, for following uses: _____
- ☐ Have your representative call at my office

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

WHERE THERE'S A
BIG JOB
THERE IS A
KERN
INSTRUMENT



WORLD FAMOUS
precision surveying instruments... compact, rugged construction... fast, effortless operation. More reliable results in less time.

KERN'S NK3
precise level
in use at Gloucester Anchorage of new Walt Whitman Bridge being constructed over Delaware River. (Modjeski & Masters, Consulting Engineers)

DESIGNED FOR
HIGHEST
PRECISION LEVELING

- Functional, down-to-fundamentals design—only 4½ lbs. (8 lbs. with carrying case).
- Coincidence level and fine tilt screw.
- Readings at a glance—level and rod may be read simultaneously through 30x Telescope.
- Mean leveling accuracy under normal conditions ± .008 ft. per mile.
- Kern AR coated optics produce substantial increase in brilliance and contrast of image.

Write for Brochure ***NK 527-1***

PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL

Kern and Only Kern Offers You
the Latest Designs of Dr. Henry Wild

Kern SWISS *The FINEST in SURVEYING EQUIPMENT*

KERN INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.

. . . Reader Comment

ance and probably in use. But is it less costly than the equivalent steel frame, wood-roofed gymnasium?

It can be agreed that the concrete shell roof is an excellent solution to the given problem. It can be agreed that the owners probably got more for their money than they would have gotten with a steel beam or rigid frame and wood deck. It cannot be agreed, however, that the construction costs are lower. They are not.

The man said, "Build a better mouse trap. . . ." He didn't say you had to prove it to be a cheaper one.

LEROY F. GREENE
Consulting Engineer
Sacramento, Calif.

Longer Anchor Bolts

SIR—We note an article appearing in the Feb. 14 issue of ENGINEERING NEWS-RECORD describing the 1¼ in. diameter by 30 ft long anchor bolts installed in a cliff above the Cowlitz River near Mayfield, Wash., which you believe to be the largest anchor bolts ever manufactured and installed.

In 1955 this company made certain improvements and repairs to Lake Harriet Dam for Portland General Electric Company. To accomplish improvements and repairs to the left abutment, 12 prestressed anchor bolts were installed, each 2 in. in diameter by 48 ft in length.

Installation of the anchor rods as well as grouting leaks through and under the dam was done by Intrustion-Prepakt, Inc., of Cleveland, Ohio.

J. B. DOTTERER
Construction Superintendent
Ebasco Services, Inc.

CALENDAR

American Welding Society, Hotel Sheraton, Philadelphia, Pa., Apr. 8-12.

Building Research Institute, sixth annual meeting, Drake Hotel, Chicago, Ill., April 15-17.

Sanitary Engineering Conference on Solids Handling and Anaerobic Digestion, Manhattan College, New York City, Apr. 24-26.

American Water Works Association annual conference, Atlantic City, N. J., May 12-17.

Western Concrete Pipe Association, annual meeting, Hacienda Motel, Fresno, Calif., April 18-19.

Air Pollution Control Association, golden jubilee meeting, St. Louis, Mo., June 2-6.

Concrete Reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., June 24-29.

Building Code Conference, St. Louis University, St. Louis, Mo., April 5 and 6.

Annual Meeting of American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 16-21.

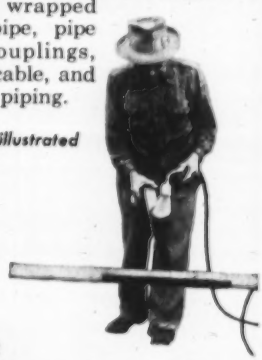
Do You Have This PIPE PROTECTION PROBLEM?

Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

You'll find the ANSWER with TAPECOAT® . . . the Quality Coal Tar Coating in Tape Form

TAPECOAT is the widely-accepted alternate material that is equivalent to mill-applied hot coal tar protection. With this easy-to-use material, protection can be applied in the field by your own men, because technical know-how, kettles and special crews are not required. You save time and money while providing the long-life protection called for.

TAPECOAT is easily applied, using a torch to soften or bleed the pitch which gives both bond and protection. Available in widths from 2" to 24", it is spirally wrapped or cigarette wrapped around pipe, pipe joints, couplings, conduit, cable, and insulated piping.

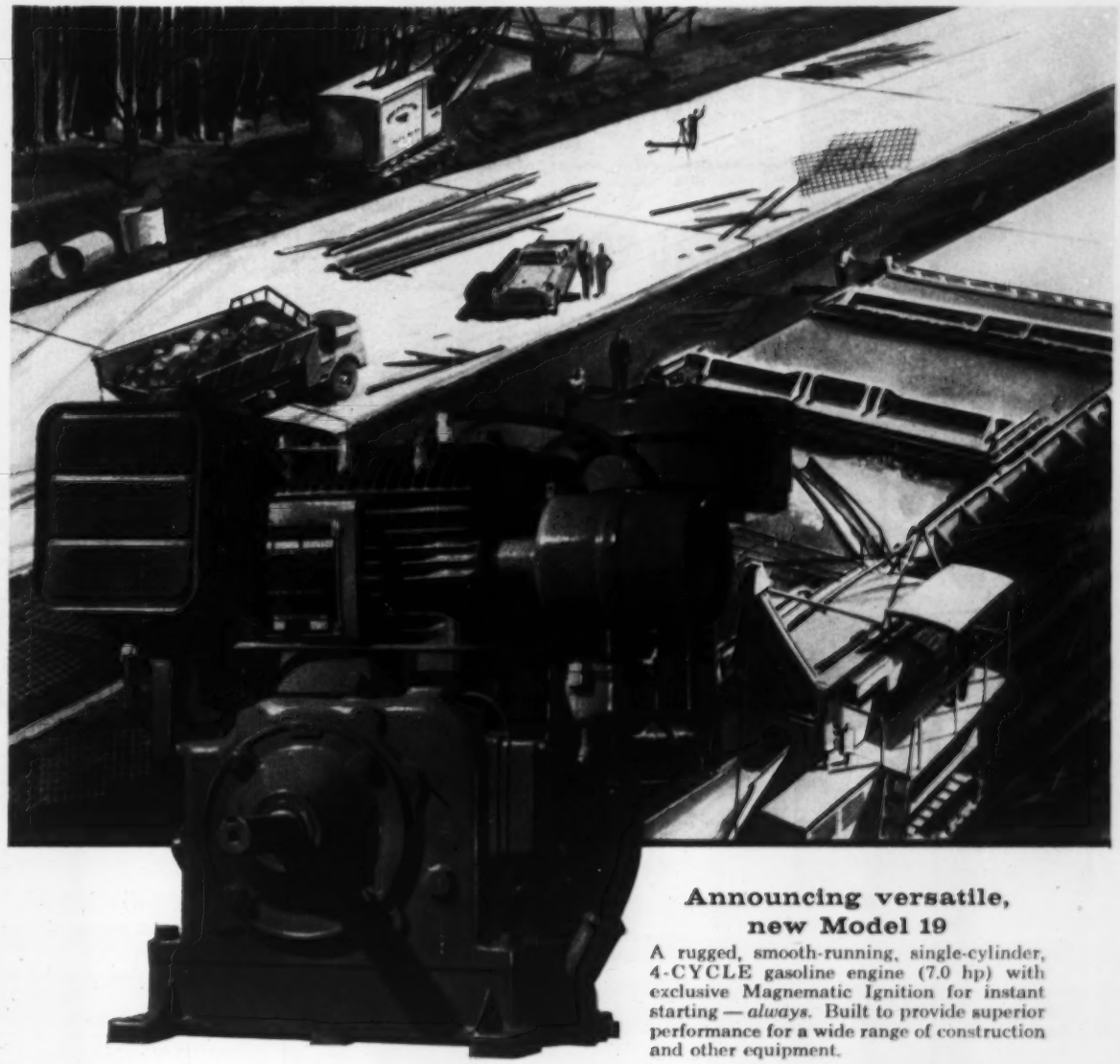


Write for illustrated brochure.

The **TAPECOAT®** *Company*

Originators of Coal Tar Coating in Tape Form

1551 Lyons Street
Evanston, Illinois



Announcing versatile, new Model 19

A rugged, smooth-running, single-cylinder, 4-CYCLE gasoline engine (7.0 hp) with exclusive Magnematic Ignition for instant starting — *always*. Built to provide superior performance for a wide range of construction and other equipment.

Power partners that make great products even better!

FOR equipment ranging from pumps, compressors, finishers, vibrators and tampers . . . to concrete saws, generators, elevating equipment, tar kettles, power lubricators, etc., etc. — insist on Briggs & Stratton 4-CYCLE engines. These *power partners* are built to take hard usage in winter or summer — sub-zero or broiling sun, snow or rain . . . they have the guts to take punishment and make tough jobs easy.

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

BRIGGS & STRATTON CORP.
MILWAUKEE 1, WISCONSIN

Authorized Briggs & Stratton service is nearby — Look in the Yellow Pages of the phone book under "ENGINES — GASOLINE"

Find Us Fast in The Yellow Pages

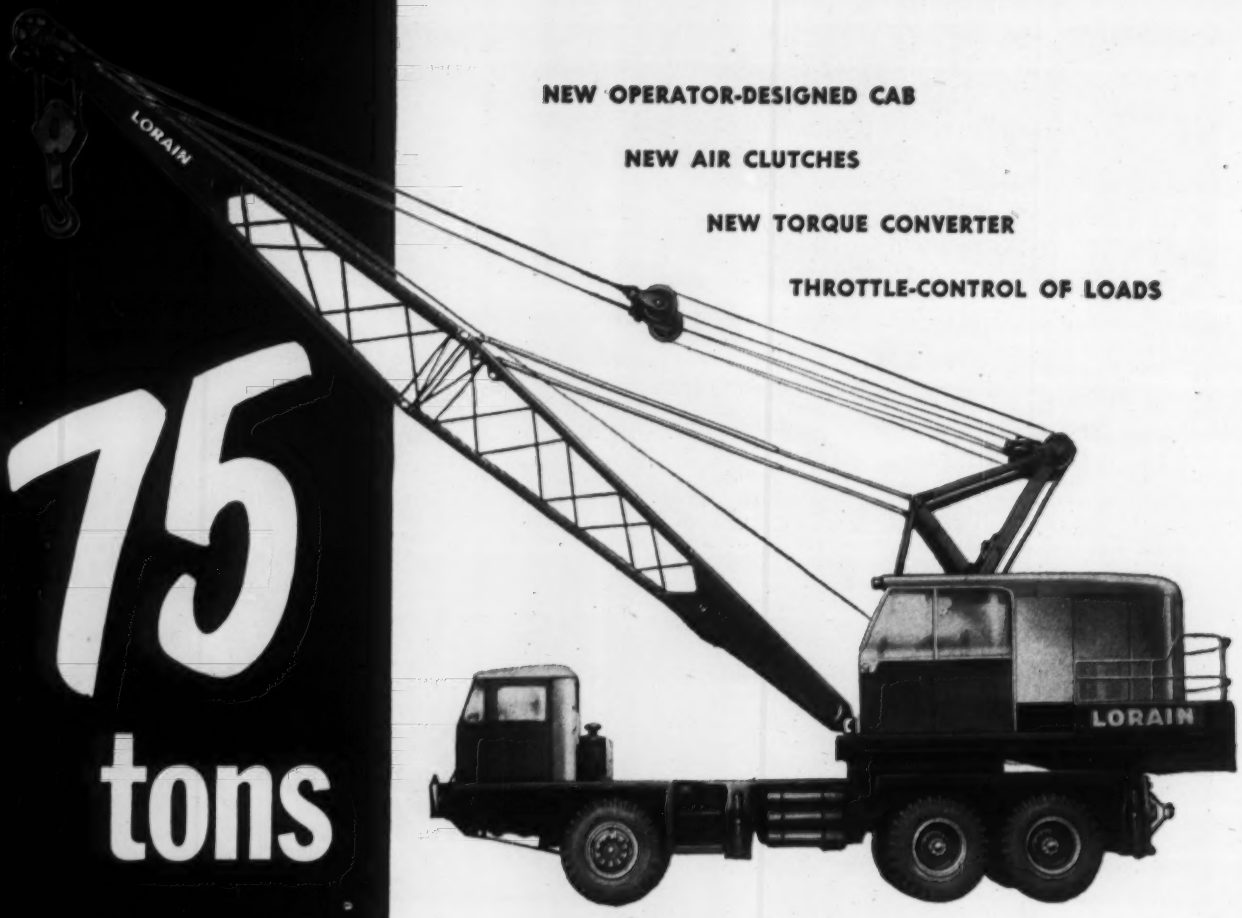
NEW OPERATOR-DESIGNED CAB

NEW AIR CLUTCHES

NEW TORQUE CONVERTER

THROTTLE-CONTROL OF LOADS

75 tons



LORAIN MOTO-CRANE® MODEL MC-875

NEW 2-LEVER "JOY-STICK" AIR CONTROLS

NEW "SHEAR-BALL" TURNTABLE MOUNTING

NEW SQUARE-TUBULAR-CHORD BOOM UP TO 200 FT.

We don't have to label this the world's largest crane on rubber tires. Any crane user knows that no one (including ourselves) has ever before come close to a rubber-tire crane of this enormous lifting capacity.

This newest of a long list of Lorain Moto-Cranes embodies all the years of Thew-Lorain "know-how" from the origin of rubber-tire cranes — by Thew — in 1918. All the design features listed above are incorporated into this *big* crane for *big* crane users — plus a 12-tire Lorain-designed, Lorain-built Moto-Crane carrier, with 10 speeds to 20 m.p.h.

This is one rubber-tire crane that will really handle the *big* jobs. *There is nothing else like it!* See your Thew-Lorain distributor for all the details. Or write direct for the new "MC-875" catalog.

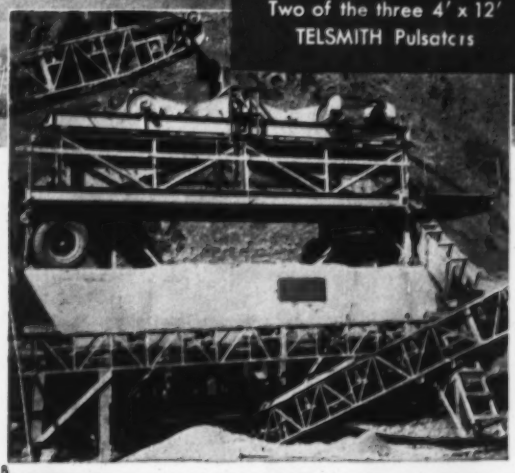
THEW LORAIN®

The Thew Shovel Co.
Lorain, Ohio

for building Oregon Highways...

48" FC TELSMITH
Gyrasphere Crusher

NEWPORT CONSTRUCTION CO.
likes
TELSMITH
equipment



Two of the three 4' x 12'
TELSMITH Pulsators

Making base rock and oil rock for the Baker Homestake Highway, this plant of the Newport Construction Co. at Baker, Oregon, averages 125-150 yds. hourly. All fine crushing is easily handled by one 48" FC Telsmith Gyrasphere. Two of the plant's three 4' x 12' Telsmith Pulsator screens, trailer-mounted and placed atop a portable bunker, are making finished sizes. The third is used as a scalper. Mr. Marshall Newport says he is "very happy" with Telsmith performance.

Send for Bulletin 266.

Q-29

SMITH ENGINEERING WORKS

500 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sungworks, Milwaukee

You can always depend on...

unmistakable identification

accurate fabrication

and on-time deliveries with...

RYERSON REINFORCING SERVICE

JOSEPH T. RYERSON & SON, INC.

PRINCIPAL PRODUCTS IN STOCK: RE-BARS · WIRE FABRIC STEEL SPIRALS · REINFORCING ACCESSORIES · PLATES · SHEETS · STRUCTURALS · THREADED BARS · CAISSON RINGS · STEEL FORMS (PERMANENT OR REMOVABLE), ETC. · DETAILING SERVICE ALSO AVAILABLE

STEEL SERVICE PLANTS AT: NEW YORK · BOSTON · WALLINGFORD, CONN. · PHILADELPHIA · CHARLOTTE · CINCINNATI CLEVELAND · DETROIT · PITTSBURGH · BUFFALO · CHICAGO MILWAUKEE · ST. LOUIS · SAN FRANCISCO · SPOKANE · SEATTLE

ENGINEERING NEWS-RECORD

Vol. 158 No. 12 March 21, 1957

Number of copies printed this issue: 76,194

CONTENTS

NATIONAL AFFAIRS

Contractors See Tighter Price Squeeze 25
CE's Role in Nuclear Engineering 28
Sewage Plant Reaches Halfway Mark 29
FPC Study Hits Two-Dam Scheme 30
Headway Made by Disposal System 30
Warehouse Walls of Four Materials 32
Big Water Bill for San Diego 33
Are Land Surveyors Engineers? 34
Goal Set for Trans-Canada Pipeline 34
Washout Damages Denied Dam Builders 34

FEATURES

Airport With Passenger Appeal 39
Tetrapods—Four Legs Against the Sea 46
Building a Tunnel Under a Busy Canal 54

INTERNATIONAL

Quarry Is Test Lab for Towers 61
Buenos Aires Skyscraper Completed 61
Alcoa Drops $400 Million Alaska Plan 62
German Dam Begins to Take Shape 62
Melbourne Plans 45-Story Building 66
Rubber Tube: Liner Form for Tunnel 66

NEW PRODUCTS

Telescoping Boom Is Crane Attachment 73
Fork-Lift Has Bucket, Flatbed Attachments 73
Lighting System Permits Design Variety 78
Publications 80

RESEARCH

Canal Building Materials Are Tested 89
Army Develops Water Treatment Plant 89

FIELD AND OFFICE

Columns Built Up With Free-Standing Forms 93
Steel, Concrete Seal Under Dam 94

MEN AND JOBS

AGC Fills Its Top Posts 99

BUSINESS AND FINANCE

The Longer Look 167
Construction Markets: Harrisburg 168
Capehart-Housing Freeze to Be Lifted 169
Standford to Develop 3,500 Acres 169
Licensing Law Unconstitutional 169
Industrial Building Boom to Continue 171

LABOR

Labor's Four-Point Legislative Program 174
Wage-Hour Coverage Is Extended 178
Michigan Building Trades to Unite 178

Reader Comment ... 10
Calendar 16
Washington Observer 23
Obituaries 106
Legal 109
Books 123
Unit Prices 128
Materials Prices 130
Construction Reports. 133
Scoreboard 164
Editorials 192

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

INVESTIGATE, ANYONE?—Pennsylvania's legislature, spurred by articles in Pittsburgh newspapers that characterized the state's Department of Highways as "on the verge of collapse," is readying what observers think will be the biggest and bitterest probe into state government in years.

Observers at Harrisburg figure that the legislature's Republicans want to wrest control of highway development and budgeting from the Democratic-controlled department and put it under the legislature. To justify the move, the lawgivers plan an investigation aimed at the department's use of 50 consulting engineer firms, holding contracts totaling more than $24 million, for design of $676 million worth of new highways. Claim is that many of the consultants are "green" firms, hastily formed by political favorites of the Democratic administration.

HIGH LOW-BIDDER ACCEPTED—That $48.9 million bid that went $11 million over the Bureau of Reclamation's estimate for Trinity Dam in California has been accepted. The contract was awarded last week to the low bidders—a joint venture headed by Guy F. Atkinson Co. (ENR Feb. 14, p. 23).

HIGH LOW-BIDDER REJECTED—In another current instance of bids over estimate, the Corps of Engineers last week rejected low bids totaling $32 million. They were $18 million over what it expected to pay for dredging south Cornwall Channel of the St. Lawrence Seaway. The Corps declined even to say who its bidders were in this second attempt to get a contractor for the dredging downstream from the powerhouse in the International Rapids. First time no bidders responded. One reason given this week for the obvious wariness of contractors is the dangerously fast water in the St. Lawrence for what is largely dipper-dredge work.

DOVES AREN'T COOING, STILL—Seattle City Light and its contractors, Merritt-Chapman & Scott and Savin Construction Co., have discontinued temporary negotiations for possible termination of the contract for $15 million Gorge high dam on the Skagit (ENR Mar. 7, p. 28). Cudgels have been put aside pending a new attempt to complete the ice barrier (part of the cofferdam system at the dam excavation) which has been a principal point of contention between contractor and city. The plan is to lower temperature of the brine used to form the ice wall from −20 to −30 deg. City Light says this can be done with existing equipment. The contractor insists that equipment modifications or additions are necessary. York Refrigerating Co. of San Francisco, suppliers of the freezing equipment, is being asked to provide the answer. The project is now more than a year behind schedule.

ROUGH LIMESTONE ROADS, hills and high speeds demand careful, competent tire maintenance. Sunnyhill speeds it with this portable hoist.

THIS RIGOROUS NONSTOP PACE typifies the fast-stepping strip-mining operation of Sunnyhill Coal Company at its Rehobeth, Ohio, mine. Daily take-out varies according to demand and availability of railroad cars—but ten 50-ton trucks and one 60-tonner average a yearly total of over 1 million tons! During its 25 years in business, Sunnyhill has always been conscious of tire expense and has gone more and more to Goodyears to help reduce costs.

Now Sunnyhill is switching to Goodyear's

3-T Nylon Cord TUBELESS!

Yes—now Sunnyhill specifies Goodyear 3-T Nylon Cord TUBELESS on all new equipment!

The reasons, according to Clayton Busse, Equipment Manager, are that in Sunnyhill's tests TUBELESS Goodyear tires ran 10 to 15° cooler in 80° weather—they have less down time from flats—and over-all tire performance is better.

Goodyear TUBELESS tires are standard, or can be specified, on foremost original equipment, *no matter how large*. For change-over of present equipment, contact any Goodyear dealer. Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Now in Triple-Tough Triple-Tempered 3-T Nylon Cord —Tubeless or Tube-Type!

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

WASHINGTON OBSERVER

The headlines about budget cutting can be misleading. Bear in mind that most of the claims about economy coming so far from the House Appropriations Committee will have little effect on actual spending in fiscal 1958. Congressmen are talking about cuts in appropriations, which in most cases do not affect disbursements from the Treasury—actual check writing—until a year or so later. Economy is cumulative, not a one shot affair. So read carefully claims of a $3 billion cut in Defense, or a 16% cut in the Housing and Home Finance Agency. Examples:

The HHFA was cut $200 million in budget requests by the House committee. Housing Administrator Cole says the reduction, even if finally approved by the House of Representatives and the Senate, will have little effect upon spending in the year beginning July 1. The same goes for the cut in mortgage-purchasing authority of the Federal National Mortgage Assn. Should the reduced authority, from $250 million to $150 million, run out in the next several months, Congress would be asked, and almost certainly would approve, additional authority.

The urban renewal program could be hurt by the House committee cut. Not that the reduction recommended, from $250 million to $175 million, would slow down or cancel any projects now being built, but it would take away the power to negotiate new programs. The same goes for the $25 million reduction from $175 million to $150 million for college housing.

•

Budget cutting has blocked new attempts to get federal buildings under way. The General Services Administration wanted to go to Congress for $335 million in appropriations because the present lease-purchase program has not worked.

But the Budget Bureau turned down GSA's request—and nothing was asked of Congress. This came out during appropriations bill hearings. House members quizzed GSA Administrator Franklin Floete about his plans for needed buildings.

Congressmen want to get the projects going in their district of course. There's been publicity in their home town papers about lease-purchase approvals of projects and the like—but now it appears that, unless the money is appropriated by Congress, most of the buildings won't get beyond the blueprint stage.

•

Building trades unions may be in the headlines next as the McClellan committee winds up its hearings into the teamster situation in Oregon.

The committee will look next at Scranton, Pa., where a grand jury is investigating alleged fraud in the construction of a U. S. Signal Corps depot. It may be a week or so before the hearings begin.

•

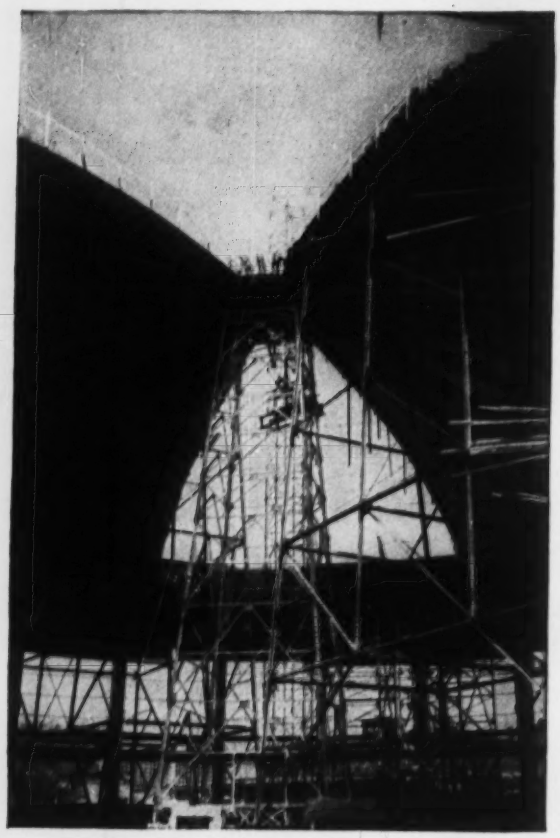
The Supreme Court has been asked to stay out of the Hells Canyon picture. It has been asked to throw out a request that it rule on legality of the Idaho Power Co. license to build three dams there on the Snake River.

Two briefs were filed requesting the court keep hands off. Both Idaho Power Co. and the Federal Power Commission have urged that the license be allowed to stand for the three dams along the Idaho-Oregon border.

In favor of Supreme Court review is the National Hells Canyon Association which asks review of a U. S. Court of Appeals decision now upholding legality of the license. The association would like to see the private company's license revoked, claiming it counters the Federal Power Act.

FPC says its license is legal, not in violation of the federal law.

50% Form Saving



DALLAS MEMORIAL AUDITORIUM
Owner: CITY OF DALLAS
Architects & Engineers: GEORGE L. DAHL, Dallas
Consulting Engineers: AMMANN & WHITNEY, New York
General Contractors: R. P. FARNSWORTH & CO., INC., New Orleans
Paving Contractor: TEXAS BITULITHIC CO., Dallas

WITH 'INCOR' IN DALLAS MEMORIAL AUDITORIUM

• Great, new Dallas Memorial Auditorium includes a 10,000-seat arena, an adjacent building with 2,000-seat auditorium and smaller meeting halls, and 100,000 sq. ft. of exhibition space under the two structures.

The main auditorium is a circular, reinforced-concrete structure, 300 ft. in diameter, with dome-shaped roof 90 ft. above 1st floor slab. Roof is carried by arch ribs, which in turn are supported by cantilever ribs extending out 45 ft. from the tops of 70-ft.-high columns.

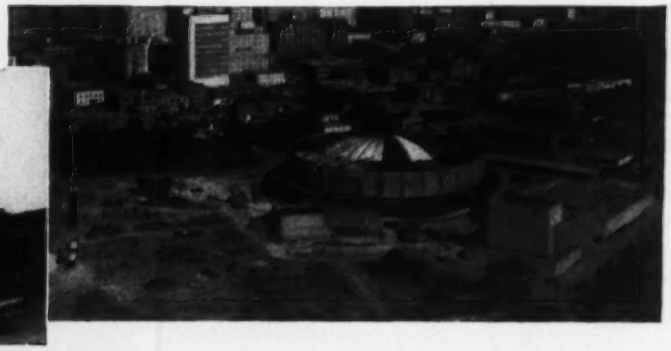
The roof was concreted in 16 pie-shaped sections, poured in opposing pairs. These sections connect with a concrete plate, 22 ft. in diameter, at dome's top.

In cantilevers and dome, dependable 'Incor' high early strength saved 50% on forms, contributing to economies which resulted in total costs about half those estimated for alternative methods.

These economies were realized by planning with construction methods in mind . . . utilizing the principle of selective concreting—that is, using 'Incor'* 24-Hour Cement where it shows a net saving through time and form economies, elsewhere Lone Star Cement.

Keep selective concreting in mind—it's a well-proved way of getting more work in place at less cost.

*Reg. U. S. Pat. Off.



LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK NORFOLK • RICHMOND • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,200,000 BARRELS ANNUAL CAPACITY

AGC looks at year ahead, sees:

- **Profit margins are shrinking**
- **Crackdown on erring bidders due**
- **Bid-shopping legislation set**

Tighter Price Squeeze Coming

A business situation that presents the picture of more work ahead than ever before, more competition than ever before—and constantly shrinking profit margins—confronts the U. S. construction industry today.

That's the consensus of 1,800 contractors who converged on Washington last week to attend the four-day 38th annual meeting of the Associated General Contractors.

Their meetings took up such diverse matters as labor legislation, contract problems involving government agencies, and resulted in two sharp warnings—one directed at their own members, the other at specialty subcontractors: AGC will not tolerate deliberate bidding errors, made to gain knowledge of the opposition bids; nor will it countenance any changes in recently agreed-upon legislation governing the handling of sub-bids.

And the contractors took time off from their sessions on Wednesday to witness a proud event—a groundbreaking ceremony for an $800,000, three-story headquarters building of their own, on a site at 20th and E Streets, N. W.

But throughout the sessions, and the three days of pre-convention committee meetings, ran the theme of ever sharpening competition, and rising prices despite every effort to hold them down.

• **Price squeeze**—Not that anybody was crying calamity. Everyone—and AGC itself on an official basis—was predicting bigger total business volume for coming years.

But what worried contractors was that in order to hold general prices down to meet ever-growing competition, they find themselves in a nasty squeeze that leaves them no alternative but to shave their profit margins dangerously thin.

Notoriously, contractors are chary of discussing their profit margins anyway. But a good sampling of the men in attendance indicated agreement that present margins in the heavy and highway fields are running between 4 and 6%; in building construction, as low as 1½%.

In a business where the risk is as great as in construction, such margins are dangerously slim, said the builders. The answer has to be redoubled efforts to increase productivity, trim overhead, hold down labor costs—but also a general rise in bid prices, eventually.

"There isn't much more room for pencil-sharpening," commented Frank J. Rooney, retiring AGC president and a major Miami building contractor. "There is still a considerable field for research in building methods, aimed at increasing our own efficiency, rather than at improving materials. Courses, now being given at least 13 major colleges and universities, aimed at the business of construction, will help a lot in years to come. But in the meantime, the squeeze is getting tighter—materials prices have risen, price of equipment is up, labor costs go higher."

• **Highway prices holding**—In spite of these pressures, not a single highway contractor would offer any confirmation of recent reports (ENR Mar. 7, p. 21) that highway bid prices generally were rising to any appreciable degree. Most insisted that their bids were in the same range, or even lower, than they were a year ago, and cited specific instances of earthmoving unit bids within fractions of pennies of what they were 10 or 20 years ago.

Not many of the highway men, incidentally, were particularly pleased with one statement made to them in a talk by Bertram D. Tallamy, newly appointed Federal Highway Administrator. Said Tallamy: The government wants the highway program let in small increments as well as big ones, to encourage competition, healthy for the industry and for the taxpayers. "There should be more contractors on the job," he commented.

Otherwise, however, the group expressed no concern over the progress of the highway program to date—most reports seeming to indicate that the states were getting the program started at least to the best of their ability. Tallamy's report that in the first eight months of the program, a total of $1.4 billion had been obligated by the states on the interstate system was well received, as were his assurances of redoubled efforts to aid the states in orderly planning of their work.

• **Don't change agreement**—Turning to legislative matters, the AGC heard with little more than resignation, a report that legislation governing the handling of subcontractors will certainly be approved at this session of Congress.

Four identical bills (H.R. 3241, 3339, 3340, 3810) are now pending, after lengthy compromise sessions between an AGC committee and representatives of the specialty contractors, who have been trying to force separation-of-bids legislation through Congress for more than four years.

The new measures, according to AGC's Legislative Committee Chairman R. A. Smith, are at least "acceptable" to AGC, and the organization will not oppose them as it has opposed all other legislation on this subject.

But Smith—and later the whole AGC in the form of a resolution—issued a flat warning to the specialty contractors: AGC will tolerate no attempts to amend the bills in their present form. Any amendments will bring full opposition to the entire bill itself if necessary, as well as the amendment.

(Continued on next page)

. . . AGC looks at the year ahead

In essence, the four measures eliminate most of AGC's previous objections, Smith reported. They do not provide for separate contracts for the electrical, plumbing or other specialty trades, as had been previously proposed. But they do provide that the general contractor will have full control and responsibility for the entire contract—but must name his subcontractors in his bid, and stay with them, unless they fail to conform to certain provisions of performance, bond requirements or the like. There's a loophole in the requirement for rigid acceptance of the subs named however: Within five days of opening of bids, the general may engage another subcontractor, if he hasn't received full bids from those originally invited, or if the original sub hasn't furnished bond or otherwise met the requirements.

Commenting on the legislation, Smith told his audience that AGC isn't quite happy with the legislation anyway, since it is in fact in the class of restrictive law. "I'm personally not sure what it will accomplish that hasn't been, or can't be already accomplished without such law," said Smith. "But it's the best we seem able to do—and we can live with it."

Another piece of legislation the organization will back will be aimed at making it a federal offense to destroy contractor's equipment employed on a federal job. Contractors said that their losses on such jobs are running into the hundred of thousands of dollars, through thefts of small tools and materials. AGC will propose, in addition, making it a federal offense to receive or buy such stolen equipment or materials.

• **Ethics**—Probably the hottest debate of the convention came up over a resolution concerning bidding errors, where it has been at least a suspicious circumstance that such errors are being made deliberately to gain knowledge of other bids.

R. W. Long, chairman of the organization's task force Committee on Contract Specifications, reported that federal agencies are noting an alarming increase in bidding errors—now running at the rate of about two a week on all government construction contracts.

The result of such errors, Long said, was usually a re-bid on the contract—at which the erring bidder could again submit a bid on the same job, having now corrected his original error. The problem, said Long, is that the errors or claimed errors have increased so rapidly as to create suspicion that they were made deliberately. "I am told that bidding errors are increasing, and that among those making the errors there are quite a few repeaters, and some professionals," he said in answer to questioning from the floor. "The problem is to prove deliberate intent of course. But the circumstances are suspicious."

After lengthy debate—which included references to "tarring the whole industry"—the group approved a three-part resolution, urging government contracting agencies to:

(1) Deny the right of a bidder, claiming an error, to re-bid on re-advertisement of the same job.

(2) Offer as the only relief to such an erring contractor the right to withdraw his bid.

(3) Award the contract on the basis of the low bid, after eliminating the bid that was in error.

Maj. Gen. E. C. Itschner, Chief of the Army's Corps of Engineers, commented that present regulations probably would not permit the contracting agencies to follow such recommendations.

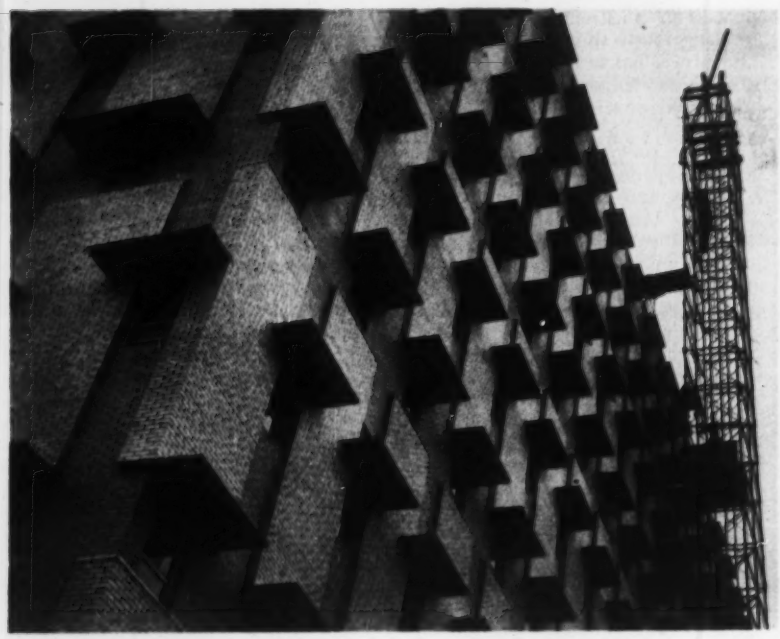
He was assured from the floor that AGC would seek proper legislation to put teeth into its resolution, if that step is found to be necessary.

• **Runway specifications**—One result of the meetings was clarification of tolerance requirements set up for the new portland cement concrete runways required by the Air Force for its new jet bases.

AGC has objected strongly to the exacting tolerances, originally set up to require accuracy within ⅛ in. in every 16 lineal feet of runway, both laterally and transversely. (One runway with such requirements is now under construction at Dow Air Force Base, near Bangor, Maine.)

In answer to the contractors' objections that such tolerances are needlessly tight, Gen. Itschner, after conferring on the dais with Brig. Gen. C. Pratt Brown, deputy chief in the office of the Air Installations Officer, explained that the Air Force had never officially called for such specific tolerances—but had insisted that it must have extremely smooth runways and taxiways to prevent damage to its fast, heavy jets.

As result of conferences with the Air Force, Corps of Engineers and AGC,



Several Shades Out of the Ordinary

Every window has its own "eyebrow" in the new 12 story Shell Oil Corp. building in Tulsa, Okla. All four walls of the $24 million office building feature distinctive sun canopies over the windows to cut solar heat gain.

The sunshades were precast of lightweight concrete, then hoisted into place.

Although it derives its name from the principal tenant, the new building is owned by the Sunflower Corp. The top two floors are for equipment space.

The building was designed by McCune, McCune & Associates, Tulsa architects-engineers. Tulsa Rig & Reel Co. is the general contractor.

Gen. Itschner said, new specifications will be modified to these:

Paving tolerances will be ⅛ in. for every 12 lineal feet longitudinally; ¾ in. for every 12 ft transversely where cross slopes are 1% or less, and ½ in. for every 12 lineal feet transversely where slopes are 1% or greater. In addition, the Corps has agreed to place bench marks roughly every 1,000 ft along the length of the runway, from which the contractor can work to maintain subgrades to within the 4/100 ft tolerances required for subgrade—thus saving the contractor the necessity for primary surveying for this purpose.

These requirements will be put into effect on all Air Force paving jobs immediately, Itschner added, except where such changes would delay work already under way or too far along in the design stage.

• **Manpower**—Two facets of manpower—labor and technical—continued to occupy the industry's attention.

Members heard speakers urge greatly increased apprentice training—and got a warning from John J. Murphy, secretary of the bricklayers, masons and plasterers international union, not to snatch apprentices out of training programs before they have completed their full terms in the training category. And they heard Henry H. Armsby, chief for engineering education in the Office of Education, declare that by 1965, there would be jobs for a total of 1,250,000 engineers in construction—but only about 969,000 engineers available.

Armsby urged ever greater participation by the contractors, as well as all other interested groups, in urging young persons to enter the engineering field. "What can be done can be drawn from one figure, for example," he said. "Something like 63,000 boys, who are in the top ¼ of the high school scholarship classifications, graduate each year from high school, but do not go on to college."

On their own labor problems, the contractors reported some dissatisfaction with requirements of the new highway law which seem to require considerable extra paper work on their side in order to meet the Davis-Bacon Act provisions. But no one was prepared to say how much extra such matters would cost.

And Lester C. Rogers, newly elected AGC president, urged AGC chapters which are composed principally of building contractors, not to negotiate general wage agreements that will affect highway and heavy contractors.

• **New slate**—Winding up their deliberations Thursday, AGC members watched the seating of Mr. Rogers as president, Fred W. Heldenfels, Jr. as vice-president, and other new officers. Mr. Rogers (see p. 99) could claim an added distinction: He is the first son of a former AGC president to follow his father into the top chair of the 6,800-member organization.

Other speakers at the session included the heads of the engineering forces of the three armed services—Gen. Itschner, Rear Adm. Robert H. Meade and Maj. Gen. Lee B. Washbourne; W. A. Dexheimer, Commissioner of the Bureau of Reclamation (who warned contractors to hold their prices down); Maj. Gen. J. S. Bragdon, special assistant to the President on public works planning; Secretary of Labor James P. Mitchell (who promised cooperation of his department in speeding construction); and Senator William F. Knowland of California.

Repair of Florida Pike Forced by Rain Effect

Florida's spanking new Sunshine State Parkway, opened just a little over seven weeks ago, (ENR Feb. 21, p. 26) is now undergoing pavement repairs due to an unforseen base condition.

Here are the facts: A section of roughly 11 miles between Stuart and Fort Pierce on the northern end of the road has stretches of its pavement badly "alligatored," broken up and pot-holed. Traffic in several places on this segment of the highway has been detoured into a single lane and held to slow speeds while repairs are made.

The reason, according to Howard, Needles, Tammen & Bergendoff, consulting engineers, and Thomas B. Manuel, chairman of the state's Turnpike Authority, is this:

Rock that forms the base in the Stuart-Fort Pierce section is known as "Belle Glade" or "Okeechobee rock"—a lime rock formation. While paving operations were under way, heavy and unseasonal rainfalls—up to 21 in.—were recorded in the area. Optimum moisture content of the rock has been found to be less than that of Miami oolite or Ocala formation used in other sections. Result is that the rock becomes "greasy," moves under load and thus contributes to breakup of the asphalt surfacing, this in turn permits more water to enter.

Remedy is seal-coating where possible, or taking up the paving and removing the top several inches of stone, replacing it with dry material ("sweetend" with some oolite that is being trucked in) and repaving.

Both the engineers and highway officials insist the rock has been found suitable under dry conditions and point out that it met all tests in the state laboratory that supervised all work on the parkway. The action of the material when wet, officials said, simply hadn't been encountered before, even though the rock has been used extensively for state road work.

It has been reported, without confirmation, that a state road nearby, built of the same material, is undergoing similar troubles now.

In any case, there's no monetary problem involved. A $74 million bond issue was sold to finance the work and the road was completed for about $62 million. So there's enough in the contingency funds to cover the repair work.

Long-Sought Seashore Road To Be Built By New Jersey

A $58 million limited access, toll-free highway from the approaches of the new Walt Whitman Bridge at Gloucester, N. J., to South Jersey seashore resorts is planned by the New Jersey State Highway Department.

The proposed expressway will run between the Black and White Horse Pikes to a point south of Egg Harbor City. There it will split, with one route going south to connect with the Garden State Parkway at Seaville and the other fork continuing directly east to Atlantic City.

Office Annex Proposed For White House Staff

A consultant's report recommends the construction of a $25.5 million office building to relieve the White House staff of cramped working conditions.

The President and his staff of over 100 now occupy the West Wing of the Executive Mansion. Conditions are such that the Presidential Secretary, James Hagerty, has to use a bathroom as the only spot to place his teletype machine.

The proposed 7 or 8 story building, which would require Congressional approval, would be built directly across the street from the White House and connected to it by an underground tunnel.

Navy Contracts Double In Texas and Louisiana

Contracts awarded for construction of Navy Facilities in Louisiana and Texas during February totaled more than $12 million. The figure doubled the amount of contracts awarded since July 1, 1956, the start of the fiscal year.

The Naval Auxiliary Air Station at New Iberia, La., received the largest part of the awards. Four contracts at the new installation totaled $10.9 million. Principal contractor was T. L. James Co., Ruston, La.

For the Texas installation, Allen M. Campbell Co. of Tyler, was awarded three contracts totaling $1.2 million.

Progress in waste disposal, shielding, radioactive tools highlight . . .

The CE's Role in Nuclear Engineering

The 1957 Nuclear Congress held last week in Philadelphia's huge Convention Hall offered something for practically everybody—including civil engineers.

Coordinated by Engineers Joint Council, no less than 26 sponsoring organizations staged a mighty show for some 10,000 registrants, covering every aspect of the peaceful use of atomic energy. Among the sponsors were the American Society of Civil Engineers, American Society for Testing Materials, American Water Works Association, Federation of Sewage & Industrial Wastes Associations, American Public Health Association, American Society for Engineering Education and the Engineering Institute of Canada.

Sessions of primary interest to civil engineers were held on disposal of radioactive materials, biological shielding, economics of nuclear power generation and use of radioactive materials as investigative tools.

I. Waste Disposal

Two half-day sessions on radioactive waste disposal revealed much that is under way toward this end but were most significant in indicating areas still to be conquered.

Prof. Abel Wolman of Johns Hopkins University led off with a frank appraisal of the present status of nuclear waste disposal: Right now there is no satisfactory method that will accommodate the amount of wastes expected shortly. Specifically, Prof. Wolman reviewed the following proposed methods—

- Recovery for use: Not being accomplished at present.
- Disposal at sea: No country is yet doing this with highly radioactive wastes—no oceanographer is yet willing to guarantee any spot in the ocean.
- Storage tanks: The predominant method but not satisfactory for the large amount of wastes expected.
- Lagooning: Satisfactory for low level wastes in very special geological formations, not likely to be permanent long-range solution as permissible concentrations of radioactivity introduced into the human environment are constantly being reduced.
- Deep wells: Practiced nowhere and many difficult questions require extensive research.
- Solids fixation: Still in pilot plant stage and relatively costly.
- Salt mines or domes: Also in the pilot stage.

The basic difficulty with nuclear wastes, which are produced in every stage of the industry from mining of uranium through use as fuel in reactors, is that they remain radioactive for hundreds of years. Most dangerous of the isotopes are strontium-90 which has a half life of 20 years and cesium-137 with half life of 33 years.

• **Present practice**—As discussed by numerous speakers, present disposal methods basically remove highly radioactive materials from liquid wastes by various means. Depending on the degree of removal obtained, the main body of effluent can be discharged safely to natural water courses, to lagoons or shallow sub-surface pools and to seepage beds, usually of clay. The concentrations of highly radioactive residues cause the problem.

Processes described for concentration of the highly radioactive isotopes include evaporation, scavenging with carrier precipitates, and ion exchange. These methods render a low level effluent which is readily disposable, but the concentrated fractions presently must be stored in tanks—tanks that are expensive, which must be monitored continuously, and which must maintain their integrity for hundreds of years.

• **The "hot" stuff**—According to the speakers, the most attractive method of disposing of the concentrated high level wastes is by solids fixation. At the Chalk River fuel processing plant of Atomic Energy of Canada Ltd., encouraging experimental results were reported on disposing of fission products in glass. Concentrated waste solutions in nitric acid are mixed with finely ground glass of the Pyrex family, a resulting gel is dried to recover the nitric acid, then the gel is fused to glass at 1,350C. The glass product is quite resistant to water leaching. Cost of this process presently is considerably higher than storage in tanks. (Although it would add only 0.06 mill per kwh to the cost of nuclear power.)

Another promising method of disposing of "hot" concentrated wastes is discharge into salt domes. The idea would be to form cavities (by mining) in salt formations which would hold nuclear wastes. However, the two big questions are whether the salt is completely watertight, and just how big a cavity should be made, considering the inherent structural weakness of salt. Nonetheless, geologists consultant to the AEC report that salt domes offer the most promising geologic approach to "hot" waste disposal. Salt domes are common in the Great Lakes and Gulf Coast regions.

Several speakers at the waste disposal sessions were pessimistic over the possibilities of deep well and shallow ground disposal. If deep wells were to discharge into aquifers 10,000 ft and more below the surface, there would be problems of locating suitable glass-sand quality aquifers between truly impermeable beds, clogging up of aquifers by precipitation of gels from the discharged wastes and handling enormous amounts of heat released by the radioactive materials in the aquifers.

Until more is known about the exceedingly complex movements of fluids in the ground and of ion exchange properties of the soil, shallow ground disposal of highly radioactive wastes cannot be practiced.

Economics of nuclear waste disposal is not yet clear, to judge from the congress papers. Considering wastes from a fuel processing plant (as contrasted to a power station), one analyst has come up with a cost range between 0.14 and 0.58 mill per kwh for 400 year storage in tanks such as now used. To achieve 8 mills per kwh nuclear power (at busbar), it has been estimated arbitrarily that about 0.1 mill per kwh can be allowed for waste treatment at the fuel plant.

II. Nuclear Power

There was general agreement at the congress that the first and most substantial application of nuclear power reactors will be for generation of electricity. But no one really could say when.

At present modern conventional steam plants produce electricity at a cost between 6 and 7 mills per kwh (including production and fixed charges. Fuel costs average 2.6 mills, maintenance and operating costs 0.5 mill, and fixed charges (depreciation, interest, local taxes) 3.2 mills. By 1970, one estimate of nuclear power costs, considered by many as optimistic, puts cost at 7.4 mills per kwh, of which 4.7 mills represent fixed charges, 1.7 mills fuel and 1.0 mill operation and maintenance. The same experts estimated nuclear power costs in 1960 at 10 mills per kwh.

Right now, however, nuclear power costs are nowhere near these prices. Construction costs for most of the plants now under way or planned are

expected to run between $250 and $300 per kw, which corresponds to a 6½ to 8 mills per kwh range for fixed charges. Present fuel costs are much more difficult to pin down. Admiral Rickover, who directed building of the atomic powered submarine Nautilus and who is now in charge of the Shippingport reactor for AEC, estimated net fuel costs at 34 mills per kwh for the first core, 28 mills for the second core, and hopes to lower this to 7 mills in the third pressurized water reactor.

III. Biological Shielding

This phase of the nuclear problem is pretty much in the hands of the structural engineer. H. M. Glen, supervising structural engineer with the Oak Ridge National Laboratory presented a comprehensive paper at the congress spelling out the requirements for effective biological shielding and including comprehensive data on characteristics, costs and construction procedures for various types of shields, primarily dense concrete.

Shielding is expensive business at a nuclear plant of any kind. For example, 215 lb per cu ft concrete can cost $160 per cu yd in walls 4 ft thick and more, as often required. Biological shields are needed not only for reactors, but for the numerous "hot" working and storage spaces at plants processing radioactive materials. Sometimes concretes made with iron or steel and coarse aggregate are required—these mixes can have a density up to 370 lb per cu ft and cost $380 per cu yd.

IV. Radioactive Tools

Several papers on use of radioactive materials for investigative purposes were presented at the congress. P. F. Carlton, research director of the Corps of Engineers Ohio River Division Laboratory, described devices that have been used successfully to measure soil moisture content and soil density without disturbing the soil.

Two types of meters for each measurement have been developed, a probe type and a surface type. They emit either neutrons or gamma rays whose energy is depleted by collisions with atomic particles in the surrounding mass being measured. A counter tube in the meters determines these energy depletions which can be correlated with soil moisture and density.

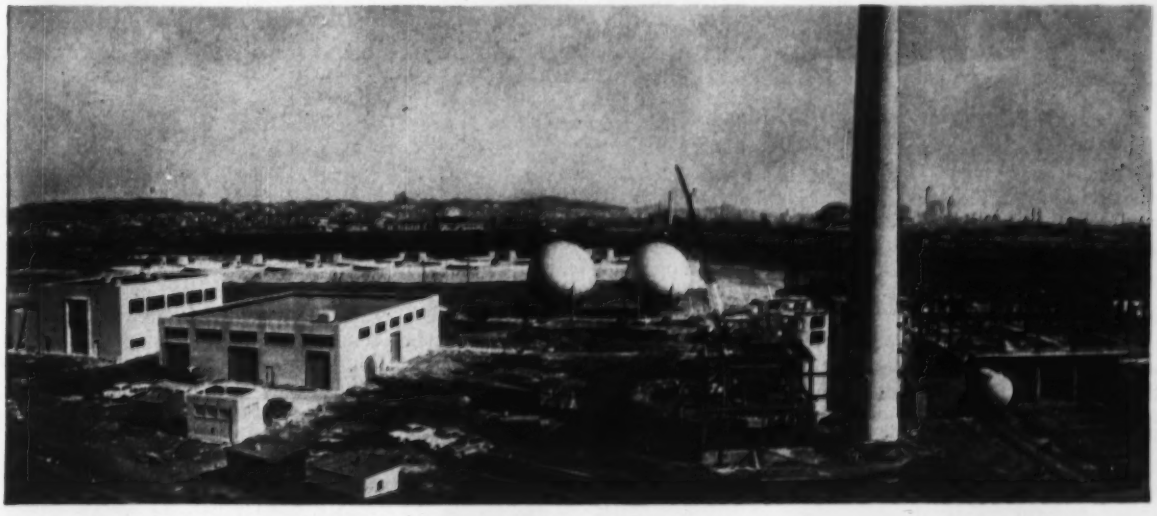
Moisture content can be measured to within 1 lb of water per cu ft of soil. Densities may be determined to within 3 lb per cu ft. The measurements taken by the meters represent average values from a soil volume ranging between ¼ and .75 cu ft. (In the probe types rays penetrate to a radius of 6 to 8 in.)

C. P. Straub and G. R. Hagee of Public Health Service's Taft Sanitary Engineering Center described studies in which radioactive tracers were used singly or combined with dye and chemical tracers to define flow time and dispersion of organic materials in streams and at sewage treatment pilot plants.

In another paper of interest to sanitary engineers, B. Kahn and A. S. Goldin of PHS described techniques that have been developed to identify radioactive materials in natural waters, bottom muds and soils, and in vegetation. Specific procedures were presented to identify strontium, cesium, barium, cobalt, radium and iodine. It was emphasized that in monitoring streams for radioactivity, measurement of the river muds, which accumulate radiotoxicity, is imperative.

State regulatory agency action to control radioactive wastes is not all that it should be, said the authors of another paper. Only 12 states have extensive programs, 16 report for minor activity, the remainder are doing nothing.

Most of the papers presented at the congress are available for 30 cents each. Suggested procedure is to write Engineers Joint Council at 29 W. 39 St., New York 18, for the program which contains a handy ordering form.



Cincinnati's Sewage Plant Reaches Halfway Mark

Cincinnati's $25 million Mill Creek Disposal Plant is pictured at the halfway mark in its construction. At left are the powerhouse and service buildings. The steel skeleton of the sludge disposal building and sludge incinerator chimney are at the right. And behind the spheres—which will hold digester gas to be used to produce the plant's electricity—are the sludge digesters.

The plant, started 2½ years ago and scheduled for completion in early 1959, is designed for an average 129 mgd and a storm-flood capacity of 330 mgd. The complete-treatment facility also is expected to remove sludge banks that are being formed now in the Cincinnati pool.

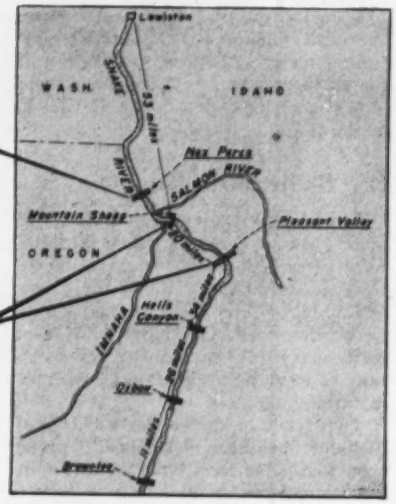
Proceeding with the work, bids will be taken in April for Contract No. 7, estimated at $7 million, and including construction of a pumping station, grit chambers and chlorination facilities. In August, Contract No. 8 at $3.5 million will be entered into, involving primary settling tanks, chemical building and sludge pumping building.

During last year and January of this year, the city awarded contracts totaling more than $6 million for construction of sewers. Plant and sewers come under Cincinnati's $47 million Mill Creek Sewage Works project.

New switch on the Snake:

Nez Perce Dam set for approval instead of . . .

. . . Pleasant Valley and Mountain Sheep Dams



FPC Study Hits Two-Dam Scheme

The Federal Power Commission staff has recommended denial of the application of Pacific Northwest Power Co. to build two hydroelectric dams on the Snake River in Idaho and Oregon.

PNP, composed of a group of four utilities, had sought to build Mountain Sheep and Pleasant Valley Dams just below the Idaho Power Co. Hells Canyon Project. The $168 million project would develop about 1 million kw (ENR Dec. 20, 1956, p. 19).

Reason for the denial: The company project is not the best adapted for comprehensive development of this stretch of the Snake River.

The FPC staff instead proposes construction of Nez Perce Dam further downstream from the proposed company project, and below the mouths of the Salmon and Imnaha Rivers.

Nez Perce has been on the books since 1942. It is common knowledge that the Army Engineers have not recommended immediate construction—although the site is regarded as one of the most desirable on the Snake—because of opposition to the project due to the fish problem which the Army assumed could not be solved for some time.

Now, says the FPC staff, it appears on the basis of recent studies that enough progress has been made in solving fish passage problems so that Nez Perce should not be rejected by authorizing Mountain Sheep and Pleasant Valley.

Nez Perce, according to FPC, would develop a head of 595 ft compared with 540 ft for the company project. It would provide two-thirds more power than the company project. It would provide 3.9 million acre-ft of usable flood-control storage compared with about 500,000 acre-ft for the company project. And, says FPC, with Idaho Power Co.'s Brownlee Dam now under construction, it would supply all the additional flood-control storage necessary in the Snake River Basin above the Clearwater River.

The FPC staff also states Nez Perce would be economically feasible for private or federal financing and construction although flood-control storage could be facilitated by a federal contribution for that purpose similar to the Markham Ferry Project in Oklahoma.

USBR and Utility Agree On Power Dam Above Friant

An agreement on the hydroelectric power development planned for the San Joaquin River at Mammoth Pool by the Southern California Edison Co. has been reached between the power company and the federal Bureau of Reclamation.

The problem involved an arrangement that would not interfere with irrigation operations of the Central Valley Project's Friant Dam; the Mammoth Pool development will be upstream from the USBR dam.

Negotiations between the bureau and Southern California Edison have been under way for five years. It is believed the agreement reached by the regional office and the company will be approved by the Interior Department in Washington.

Southern California Edison proposes a $44.5 million project on the river, including a 315 ft high dam to create a reservoir of 123,000 acre-ft capacity and a powerhouse of 126,000 kw capacity.

Small Sewage Plants Make Gains

Contact aeration sewage plants are fundamentally sound, can accomplish better than 90% BOD and suspended solids removal, and are equal to other conventional methods of sewage treatment.

Those are the conclusions of the New Jersey State Department of Health which has approved 38 such plants—27 already in operation—for both municipal and private development projects.

The status of contact aeration sewage plants in the state was one of the subjects dealt with at the 42nd annual meeting of the N. J. Sewage & Industrial Wastes Association held last week in Atlantic City. In a paper by Thomas P. Conlon and John Wilford, senior public health engineers of the State Department of Health, the results of a study of some of the plants in operation in the state were revealed.

Although the study did not concern itself with costs, some figures were obtained by ENGINEERING NEWS-RECORD from Lanning Sanitary Engineering Co. of Trenton.

Lanning is the sole franchise holder in the state for the L. B. Griffith system, which is the one used for the New Jersey plants. For three different plants of 0.8 mgd, costs were $207,000, $272,000 and $314,000. (The last figure involves a job that required wellpointing.) For two housing development jobs, one for 1,200 people cost $70,000, another for 3,000 will cost $148,000.

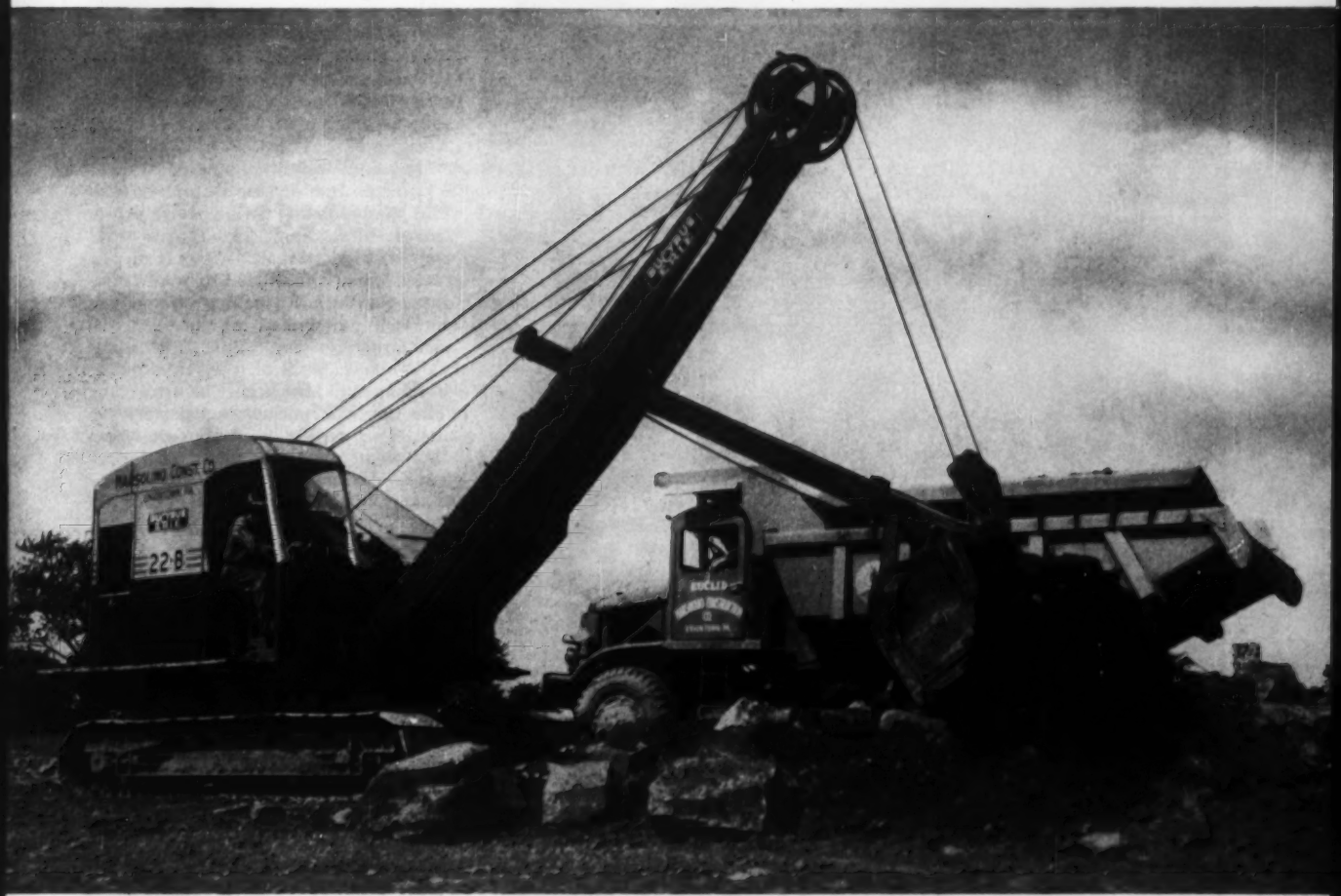
Actual cost may be lower for the larger plant, which, as part of some design changes, will have shallower tanks with flat bottoms, instead of the present hopper bottoms.

Briefly the contact aeration process works as follows: Incoming sewage goes into a preliminary settling tank, then to first stage aeration tank, to a settling tank, to second aeration tank, to another settling tank, to digester tank and to sludge beds. The process is one of continuous flow with no recirculation to speak of. Air lifts remove sludge.

The aeration tanks hold a number of vertically suspended asbestos-cement panels upon which the sewage-destroying organisms grow, aided by air introduced through diffuser tubes below the panels. In the N. J. plants, panel surface area is predicated on a loading of 5 lb BOD per 1,000 sq ft of aeration surface. However, the plants were found to be doing better than design. For example, at one plant handling 92% of design flow, 13.3 lb were being applied with 11.6 lb removed.

The sewage disposal unit is a single, compartmented tank with operation relatively simple, aided by automatic control (ENR May 10, 1951, p. 35).

6 ways Bucyrus-Erie Excavators SAVE you money to MAKE you more money



This ¾-yd. 22-B loads dirt and rock fill for a turnpike extension in Pennsylvania.

It isn't just through their extra output ability that Bucyrus-Erie excavators help you make money. They *save* you money in many ways, thus adding to your profits.

1 Save downtime. Cold, hard figures kept by users show that a Bucyrus-Erie stays on the job more hours, helps get the maximum work out of companion equipment.

2 Cost less to maintain. There are actually fewer parts in a Bucyrus-Erie excavator to wear out, and they are built to last — which adds up to lower cost maintenance.

3 Save fuel. Elimination of deadweight through proper design means less power wasted swinging useless metal. Smooth, direct flow of power means more of it doing useful work.

4 Cut conversion time. It's easy to convert from one front end to another. Quick convertibility gives you wider use of your machine, too.

5 Service faster. Many grease fittings are grouped at central, easily accessible points. Adjustments are easy to make—and "stay put."

6 Last longer. It's a tradition in the excavator field that Bucyrus-Eries outlast other makes, cutting your depreciation and replacement costs.

These and other savings add significantly to the profits from Bucyrus-Erie excavators. Why not learn the whole Bucyrus-Erie profit story — see your distributor or write direct for more information. 316-37C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Warehouse Walls Made of Four Materials

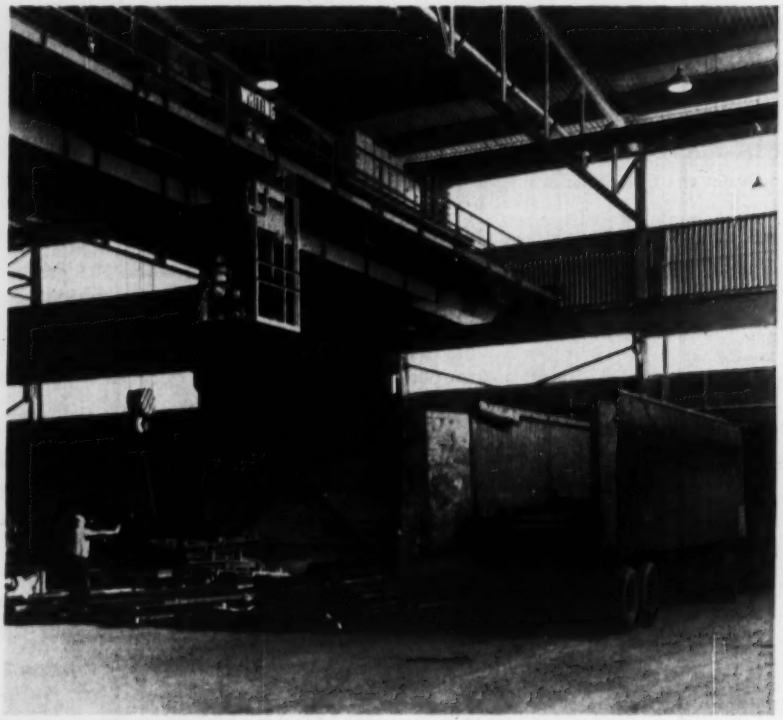
Stainless steel siding, translucent plastic panels, mica-protected metal curtain walls and masonry form the walls of a 400,000 sq ft office and steel storage warehouse of A. M. Castle & Co. at Franklin Park, Ill.

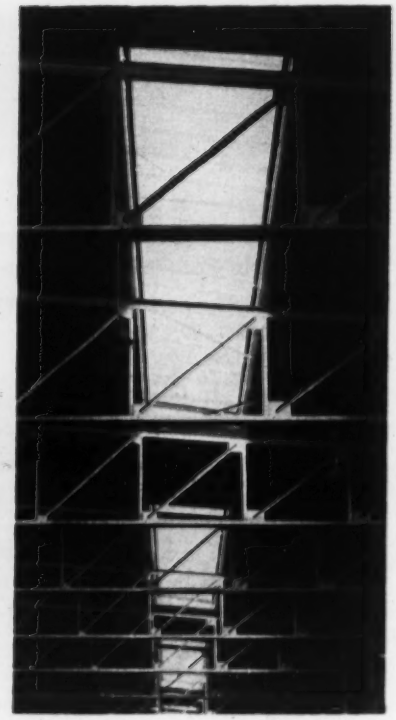
The one story warehouse is 700x512 ft in plan. It is divided lengthwise into four bays, each 100 ft wide, and a center bay of 110 ft. Some 32,000 sq ft of 22 gage stainless steel, 12,000 sq ft of protected metal and 36,000 sq ft of corrugated translucent paneling were used in the wall construction of the nearly 10 acre structure.

The lower walls of three sides of the building are of masonry construction. The fourth is mica-protected steel siding. This wall will be removed when the warehouse is expanded and the siding used elsewhere.

The upper walls of the building are

WALLS OF A WAREHOUSE in Franklin Park, Ill., are made of (1) stainless steel sidings; (2) translucent plastic panels; (3) masonry, and (4) protected metal. These materials were used to provide a maintenance-free, long-lasting finished exterior.





DAYLIGHTING OF THE WAREHOUSE interior is accomplished through the use of translucent plastic panels installed in both the skylights and the walls. The panels transmit a large percentage of light even on cloudy or overcast days.

all made up of the stainless steel and plastic panels.

• **How panels were installed**—The unbacked stainless steel panels were fastened to girts or purlins with stainless steel self-tapping screws. Side-lap fastenings were made with stainless steel bolts and neoprene washers. The steel panels also were attached to the plastic panels with steel fasteners.

Installation of insulated stainless steel panels for the office-building second story walls differed in a few details. The panels were backed with 1½ in. of glass-fiber insulation plus a backup sheet of 18 gage galvanized metal. The galvanized sheet was placed first and fastened to the steel girts with self tapping screws or by welding. Subgirts, of ⅜x1½ in. steel bars, were then welded to the standing seams in the front of the sheets. Next, the insulation was placed between the subgirts. Then the stainless steel face sheet was placed over the insulation and screwed to the subgirts.

The protected-metal panels were installed in the same way as the stainless steel siding.

The translucent plastic panels used in walls and skylights are made of glass-fiber reinforced polyester resin. They are ⅛ in. thick, 33 in. wide and 6 ft. 8 in. long. They were installed in the same way as the stainless steel siding, except that rubber grummets were used to compensate for the expansion and contraction of steel and plastic.

STEEL AND PLASTIC panels are lapped and joined with stainless steel screws.

• **Other components**—The roof has an area of some 425,000 sq ft. It is made up of corrugated galvanized steel decking covered with an insulating layer of bagasse and an asphalt membrane or tar and gravel. The roof is pitched over each of the five bays and is supported by trusses to carry the load and maintain proper bracing.

The warehouse flooring is made up of reinforced concrete or blacktop. Where there is heavy traffic and live loads the floor is 9 in. thick reinforced concrete. Storage areas for the steel have 10 in. of compacted ballast plus 2 in. of bituminous asphalt.

The warehouse columns are supported on concrete caissons, because the soft substratum at the site precluded use of spread footings. Depth of the caissons varies from 20 to 25 ft. In most cases, a bell was scooped out at the bottom of the drilled caisson holes for the purpose of providing larger bearing surface.

• **Heating and lighting**—The warehouse is heated by 60 unit heaters. These heaters are supported on columns and are 18 ft above the floor. They will heat the building to 55 F when outside temperature is 0 F. Ventilation is provided in the summer by 40 penthouse-type exhaust units.

The plastic in the walls and skylights allows a great amount of light to enter even on overcast days. However, the lighting system installed is designed to give 10 ft-c at floor level.

Each of the five bays in the warehouse is provided with two double-hook traveling cranes for loading and unloading steel. Three of the bays, including the center one, each have a 20 ton and a 10 ton crane. The other two bays each have two 10 ton cranes. All are equipped with center cabs to give the operator an unobstructed view of the steel in the bay.

The structure was built at a cost of $4.5 million.

Architect for the installation was John Cromelin. Fred Marshall was the structural engineer. The builder was the Clearing Industrial District, Inc.

New York to Modernize Harlem River Crossing

New York's 52-year-old swing span bridge over the Harlem River at 145 St. closed to traffic Mar. 18, when reconstruction costing more than $1.6 million got under way.

The contractor will start the project by simultaneous demolition of the existing approaches on the Manhattan and Bronx ends, and it is expected to be completed in one year.

As part of the renovation work, a steel span will be built to carry the bridge approach on the Manhattan side over the extension of Harlem River Drive.

Trolley tracks on the bridge will be ripped out, new pavement, curbs and walks installed and a center mall provided to separate traffic. A new operator's house will be built above the roadway level to give a better view of approaching boats. Operating machinery, electrical equipment and traffic gates will be modernized.

The contractors are Peerless Construction Co., Inc., and L. I. Waldman & Co., Inc., Scarsdale.

Pennsylvania Pike Section Will Be Open on April 1

The official opening of a section of the Northeastern Extension of the Pennsylvania Turnpike has been set for April 1.

The 47.6 mile stretch runs from a temporary interchange at Emerald, in Lehigh County, to the Wyoming Valley interchange at Dupont. It will include the Lehigh Tunnel—about one mile long—that pierces the Blue Mountain at Bowmanstown.

The remaining 16 miles of the toll-road extension, running to the Chinchilla Terminus north of Scranton, will be opened at a later date.

Big Water Bill

San Diego plans bond election for aqueduct

San Diego County, Calif., water authority directors have authorized a $35 million bond election to finance a second San Diego Aqueduct.

This is the largest bond issue ever proposed in the county. While the election date has not been set, there are indications that it will come in late May or early June.

The water bond issue would be a general obligation issue. It would be retired by a tax levy on property in the authority area, which covers most of western San Diego County.

Present plans call for delivery of Colorado River water by the Metropolitan Water District at a point six miles south of the San Diego-Riverside County boundary line. The aqueduct would terminate at Otay reservoir, just south of San Diego.

San Diego's water authority, in mid-January, ordered its staff to prepare plans for the aqueduct, following the route proposed by the State Department of Water Resources for the local section of the Feather River supply line.

This action followed assurance from the Metropolitan Water District's Water Problems Committee that it would order its half of the line to join the San Diego portion.

Are Land Surveyors Engineers?

In an interim report on which it now seeks comment, a task committee on the status of surveying and mapping, of the Surveying and Mapping Division of the American Society of Civil Engineers, recommends that land surveying be considered as an activity "separate and distinct from engineering."

In making this recommendation, the task committee's avowed intention is not to alter but to clarify; it contends that land surveying (although once engineering) is now generally regarded as a non-engineering function. But in making the recommendation it expects to hear arguments from those who prefer to consider all surveying an integral part of civil engineering.

The task committee members are: George D. Whitmore, U. S. Geological Survey, Washington; Alfred O. Quinn, Aero Service Corp., Philadelphia; and Brother B. Austin Barry, of Manhattan College, New York, chairman.

They have conducted a two-year study, a two-part study which established in its first phase a classification of positions in surveying work into the two categories: professional level and pre-professional or technician level (ENR Nov. 24, 1955, p. 164). The second part of the study, the part recently completed, is intended to establish which phases of surveying are not truly civil engineering.

The total task of the committee has considerable implications: Questions of who is an engineer and who is not; what services can be bought through competitive bids and which can not; where the ASCE has jurisdiction and where it does not.

In its first phase report the task committee enunciated some newly phrased definitions of land surveyors, survey engineers, geodetic surveyors and engineers, control surveyors, topographers, photogrammetrists, cartographers and map editors. These definitions and the classification of positions in each group into professional and technician categories were published a year ago as Paper 921 by ASCE's Surveying and Mapping Division.

No strenuous exception has been taken to the definitions or to the classifications. Both have been adopted by the division.

Now, the interim report on the second phase is ready—with discussion expected.

The recommended distinction between land surveying and engineering is certainly the most controversial part in this interim report. It is especially so since, as the report points out: "Within the province of the land surveyor is certain land subdivision work in which he shares responsibility with the engineer." In some states, in fact, land surveyors at present take the whole responsibility in such work—including street design and layout, sewerage design and layout, and drainage work generally considered to be civil engineering.

The distinction will be hardest to make in this area of apparent overlap.

In its other categories of consideration the task committee has proposed that:

- Engineering surveys for design and construction be considered engineering—except where the work is distinctly land surveying such as establishment of property lines or corners.
- Geodetic surveying and geodetic engineering be considered engineering, if apart from work that is strictly geodesy, a non-engineering science.
- Professional work within cartographic surveying be called cartographic engineering and considered a part of civil engineering.
- Aerial survey services be considered not intrinsically engineering in nature, although certainly engineering procedures when used as a part of an engineering project. Photogrammetry finds a principal use in topographic mapping preparatory to making engineering plans, and therefore is no less engineering work than if ground methods were used, concludes the interim report.

The task committee looks for a few months of discussion from all concerned with surveying—or with definitions of who is an engineer. Then it will prepare a final report and consider its task completed.

60% Completion Goal

1957 schedule mapped out for Trans-Canada pipeline

By the end of 1957, almost 60% of the 2,294 mile Canadian natural gas pipeline will be complete, J. L. Parrish, Jr., chief engineer of Trans-Canada Pipe Lines, Ltd. told the Association of Corrosion Engineers last week at a convention in Toronto.

"The moment weather conditions permit", Parrish said, "work will resume to complete the 34 in. trunk line between the Alberta-Saskatchewan border and the Manitoba-Ontario border. On that section, 230 miles of pipe have been laid and crossing of the Assiniboine River in Manitoba at two points have been achieved. Operation this year will commence near Regina, Saskatchewan, and pipelaying will continue eastward to Winnipeg where Alberta natural gas is due Sept. 1.

Also during 1957, 30 in. pipe will be laid 185 miles from Winnipeg to the Manitoba-Ontario border. From there, Trans-Canada will supervise construction by the Crown Corp. of another 310 miles of 30 in. pipe to Port Arthur.

As part of the construction program in 1957, Trans-Canada will also build 308 miles of 20 in. pipe from north of Toronto to Ste. Anne de Bellevue, at the western end of the island and Winnipeg, Parrish explained, 34 in. pipe has been delivered all winter and is already strung along the right-of-way.

Within a few weeks, Trans-Canada will begin taking delivery of 30 in. pipe—major suppliers are located in Welland, Ontario and Middlesbrough, England. About 200,000 tons of 30 in. pipe will be brought across the Atlantic, the move involving some 100 shiploads.

To complete the system, Parris added, the gas line will pass under railroads at 96 points; there will be 202 highway crossings; and the pipe will be sunk under the bed of 8 lakes, 99 rivers and 77 streams, creeks and canals. There will be over 356 miles of rock excavation and more than 139 miles of special construction through swampy ground.

MC&S-Savin Cleared

Washout damages denied builders of Nimbus Dam

A superior court jury in Sacramento has ruled that the joint contractors who built Nimbus Dam and power plant on the American River near Sacramento are not entitled to damages for washouts of cofferdams seven miles upstream where Folsom Dam was under construction.

Nimbus Dam was under construction by Winston Brothers Co. and Al Johnson Construction Co. at the same time Folsom Dam was being built by Merritt-Chapman & Scott and Savin Construction Corp. During construction there were two major cofferdam breaks at Folsom and the heavy flow of water downstream damaged work at Nimbus.

Winston Brothers and Al Johnson sued the Folsom Dam builders for $275,725. They charged improper design and construction of the Folsom cofferdams and claimed the dams were not breached prior to the breaks, when they should have been.

Attorneys for Merritt-Chapman & Scott and Savin Corp. denied negligence and claimed the washouts were beyond their control.

Nimbus Dam was a Bureau of Reclamation job, and Folsom Dam was built under a Corps of Engineers contract. Both projects are completed.

reduce forming costs...

with

UNI-FORM

PANELS

Whether you're bidding on a sewage treatment plant, industrial building, highway bridges, overpasses or abutments, heavy foundations, circular tanks or a warehouse, UNI-FORM Panels will give you the lowest all around forming costs.

Why? UNI-FORM Panels can be erected faster, using less labor and material because the three basic elements of the UNI-FORM System—Panel, Tie and Tie Key provide simple mechanical assembly into any type of form. Unique system of attaching the minimum aligning lumber required reduces labor by 50% . . . pre-engineered techniques for handling pilasters, corners, stepped footings, columns, battered walls assure fast job progress.

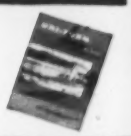
Steel framed, plywood faced UNI-FORM Panel

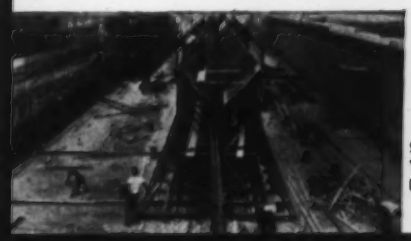
UNI-FORM TIE for any wall width

UNI-FORM Tie Key

3 simple elements in UNI-FORM SYSTEM

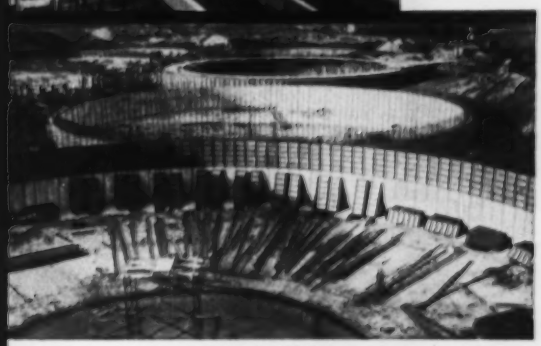
INTERESTED? **Get the catalog and complete details on the UNI-FORM System today. Send us a set of plans for our recommendations. You will be money ahead, and there's no obligation.**





Sewage Treatment Plant "Y" Walls

Slabs



Circular Walls

Heavy Industrial Foundations

P1800

UNIVERSAL FORM CLAMP CO.

Concrete Form Specialists Since 1912

1238 N. KOSTNER • CHICAGO 51, ILLINOIS

Branch Offices and Warehouses:

SAN LEANDRO, CAL.
2051-9 Williams Street
Lockhaven 2-2051
Enterprise 1-0132

CLEVELAND, OHIO
24901 Lakeland Blvd.
Redwood 2-8900

LOS ANGELES, CAL.
13210 S. Figueroa Ave.
Axminister 2-0231

BALTIMORE, MD.
1020 N. Kresson St.
Dickens 2-0240

HOUSTON, TEX.
2314 Preston Ave.
Capital 7-9204

ATLANTA, GEORGIA
1401 Howell Mill Rd., N.W.
TRinity 6-8126

Big production: at the Camp Dennison, Ohio, plant, a 2¾-yd. Michigan loads out a heaping bucket load of frozen aggregate. Power-shift transmission is standard equipment—cuts seconds off every cycle between truck and pile.

$76,000* buys *one* 2¼-yd. truck crane or *four* 2¾-yd. Michigan Tractor Shovels . . .

Here's why this Ohio firm bought the four Michigans

Ohio Gravel Company operates five plants around the perimeter of Cincinnati. Until a short time ago, ½-yd. and ¾-yd. clamshells and shovels handled all loading from stockpiles. When it became apparent that the Miami plant (300 t.p.h. capacity) did not have adequate loading capacity, Ohio Gravel asked for bids on a special 2¼-yd. mobile crane. According to Walter Flach, V. P. Production, they recognized the need for bigger bucket capacity and better mobility between stockpiles. Bids on the crane ran from $65,000 to $76,000—a substantial price to pay for increased capacity in *only one of the five plants.*

Had to leave the demonstrator

At this point Bode-Finn Co., the local Michigan distributor, got permission to demonstrate a 2¾-yd. Michigan Tractor Shovel at the Miami plant. The "demonstration" lasted two weeks—that is, Ralph Hautman (Miami superintendent) wouldn't

*Current list price F.O.B. factory for four 2¾-yd. gasoline Michigan Tractor Shovels.

let them take the demonstrator away until a permanent machine was delivered. Before the new Michigan even arrived, Ohio Gravel Company bought three more for other plants. *The total cost of the four Michigans was approximately the same as the one crane.*

Loads as much as two cranes

At the four plants with Michigans, the superintendents agree that one Michigan loads trucks as fast or faster than two ¾-yd. clamshells. With widely separated stockpiles, the Michigans move around the yards as fast as the incoming trucks—24 mph top speed. They consistently get heaping bucket-loads. Power-shifted cycles between pile and truck average about 40 seconds; it takes 4 minutes or 6 bucket-loads to put 19 tons into a dump trailer (see picture).

A typical heaping bucket-load of graded bank run comes up well over the 2¾-yd. rated bucket capacity. Digging bank run, the Michigan handles approximately 5½ tons per bucket-load.

Handling clean-up work in its spare time, the Michigan eliminates stockpile contamination. Unlike the clamshells which formerly handled the job, the Michigan does not pick up dirt as it cleans up around the piles.

More profits for producer and trucker

Faster travel, faster cycles, bigger bucket-loads obviously make more profits for producer and trucker alike. Ohio Gravel Company recognized this fact when the first Michigan was demonstrated. Your own Michigan distributor will give you this same kind of proof. A chance to demonstrate is all he asks—*you name the job.*

Michigan is a registered trade mark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2401 Pipestone Road
Benton Harbor 18, Michigan

It took four minutes to put 19 tons of material into this dump trailer. Six bucket loads filled it. Note that the 2¾-yd. Michigan has plenty of dumping clearance over the 10-ft. high side boards. Even with batch boards in place, the Michigan has no trouble.

A Flynn railing section going into place on new Walt Whitman Bridge between Philadelphia, Pa., and Gloucester, N. J.

Flynn aluminum bridge rail cuts construction costs

Light work. It's an easy, fast job—for fewer men—when Flynn extruded aluminum railings are the material. Their light weight makes cranes, lift trucks, and elaborate equipment unnecessary.

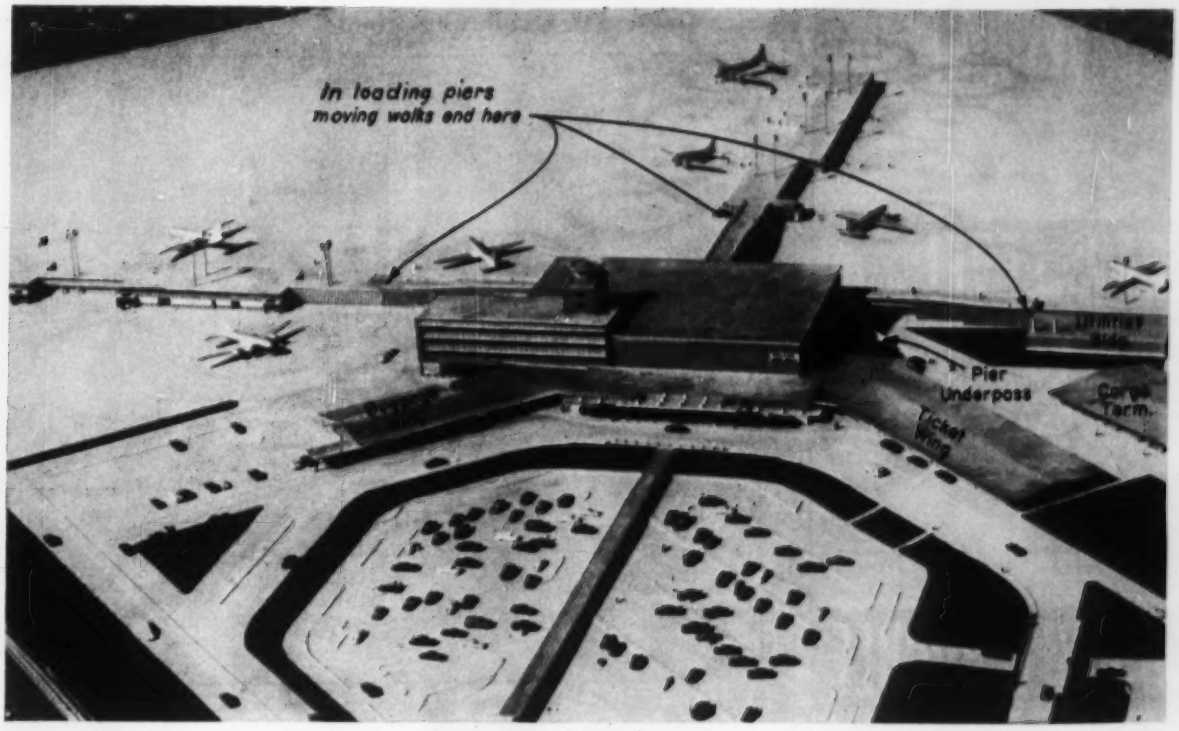
Savings mount up when you use Flynn aluminum bridge railings. Labor costs go down . . . over-all weight of bridges is reduced . . . painting and weather-protection are eliminated . . . storage and handling of lightweight, non-corroding aluminum parts is simplified. All Flynn rails, rail seats, balusters, and end posts are designed for maximum strength with minimum weight.

. . . and you can get it! Prompt delivery on custom designs or stock profiles is assured when you order from Flynn. You get service, too—all the way from the drawing board to the construction site. Learn how Flynn aluminum bridge rails and fittings can make light work of your next job.

MICHAEL FLYNN MANUFACTURING COMPANY
Extrusion Division

700 EAST GODFREY AVENUE, PHILA. 24, PA. ..... Tel.: Fidelity 2-5500
51 EAST 42ND STREET, NEW YORK 17, N. Y. ..... Tel.: MUrray Hill 2-0625
937 RADCLIFFE ROAD, TOWSON, MD. ..... Tel.: VAlley 3-2090
113 MAPLE STREET, SPRINGFIELD, MASS. ..... Tel.: REpublic 3-2814

FLYNN
EXTRUSIONS



Dallas' Love Field, with moving walks and air conditioned piers, is . . .

An Airport With Passenger Appeal

A $7 million airport terminal building nearing completion at Dallas, Texas, boasts one of the best-planned layouts in the country. In addition, its passenger loading piers are the first in the nation to be fully air conditioned and to be served by passenger-carrying conveyors.

The terminal construction, only one aspect of a $25 million expansion program for Dallas' Love Field Airport, consists of several structures—the main building, three loading fingers, a cargo warehouse, utilities building and a 4 story office building connected to, but structurally separated from, the main building.

Prime interest centers on the passenger facilities, which are all on one level. Air travelers first head for a 60 x 310 ft ticketing wing located just off the service road before it reaches the main lobby entrance. If they are driving, passengers can get to the ticket and baggage counters via a covered walkway to the main entrance passing underneath the service road, thence through a direct passageway to the ticketing wing bypassing main-lobby crowds.

After checking in near the entrance to the field, they can walk, free of their baggage, down the ticketing wing and across the main lobby to the intersection of the three loading piers. Since every passenger will pass this one point, the designers feel that with suitable directional signs travelers will not end up in the wrong finger.

• **Moving walk**—Passengers and visitors then may step on a 4 ft wide "moving walk" that runs 300 ft to the first loading position in the finger or they can travel by foot along a center walk. The conveyors can move at speeds between 120 and 200 fpm, but one optimum operating speed will probably be settled after suitable experience.

Conveyors are the so-called two-way type—an endless belt moves down one side of the finger, beneath the floor level and across the width at one end, then back up the other side. Unlike conventional conveyors, these are constructed of a rubber carpet fastened to individual pallets connected by universal joints. Pallets are mounted on rubber-tired wheels which run on a steel track. Power is supplied by a sprocket-driven chain which engages a dog on the underside of each pallet. The rubber carpet does not pull any load; it is anchored to the pallets under tension and when going around curves is stressed much as a deflected simple beam.

The conveyor terminates at the first airplane loading position because it was deemed too dangerous to allow inexperienced users to step on the moving belt from the side, which would be necessary if it were continued down the one-level 16 ft wide passage.

• **To the baggage room**—De-planing passengers may utilize the return leg of the conveyors and are deposited at the pier intersection point, actually a 40 x 56-ft plaza. This size is deemed sufficient to preclude serious bottlenecks.

Travelers then cut across the main lobby to the baggage wing, which is convenient to public and private conveyances. A direct passageway to and through the main entrance facilitates their getting to the parking lot undercover and unimpeded by general lobby traffic.

Baggage and other service traffic have unimpeded access to all areas of the parking apron and service buildings via depressed ramps, which underpass loading piers. Actually, the pier floors and conveyors slope up over

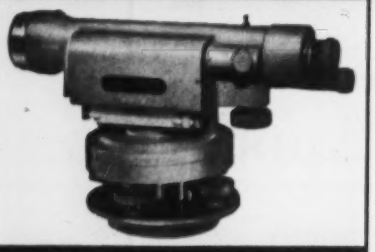
SURVEYORS!

Save time
Save money

NEW LEVEL with

Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.

DOUBLE BUBBLE



is "MISTAKE FREE"

- No need to turn telescope during leveling
- American type—erecting eyepiece, 4 leveling screws
- Unbelievably fast and accurate, yet simple-to-use. Economical!

Mail this coupon for details

FENNEL

INSTRUMENT CORP. OF AMERICA
45-22 Pearson St., Long Island City, N. Y.

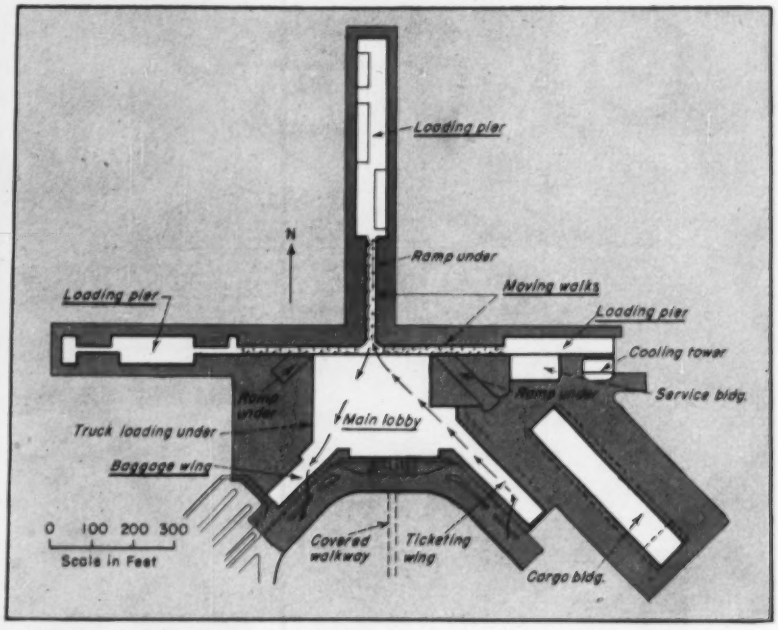
Please send me Booklet J with information on Fennel . . .

☐ Double bubble ☐ Alidades
☐ Other levels ☐ Collimators
☐ Transits ☐ Stands
☐ Combinations ☐ Tripods
☐ Theodolites ☐ Repair of present instruments, (any make)

NAME.....

ADDRESS.....

. . . Air-conditioned terminal building



LAYOUT of Lovefield's terminal building shows simple passenger flow routes.

these underpasses to provide proper clearance.

As indicated on the photograph, the fingers and the baggage and ticket wings can be expanded easily as the need arises. Even during the construction phases, loading positions in the piers are being filled in. The only difficulty is that as the wings and piers are made longer, the greater are the distances between ticket counters, loading positions and baggage claim. However, the more remote gate positions will be the least used, serving primarily during peak load periods.

The usual shops will line much of the ground floor lobby with island concessions also in the lobby area. A large restaurant and sightseeing deck will occupy a mezzanine level around the west and north sides of the lobby, with access by moving stairs.

Airline operational offices are located in the fingers, filling in the spaces between gate positions on either side of the central passageway.

• **Appurtenant facilities**—The 4 story office building cuts into the southwest corner of the lobby, with access provided at several levels. It will house offices of airport management, government agency offices, airline clubs and crew facilities and other offices.

A truck ramp below the office wing leads to the service areas in the basement of the main unit. Paved areas extend below the ticketing and baggage wings and to the far end of the loading fingers. Headroom is provided so that trucks can be driven to all equipment locations below the building to aid service and replacement of parts.

A central utilities building houses boilers producing steam for heating and driving turbines. The latter turn two 600 ton centrifugal compressors for air conditioning purposes.

Chilled water is produced and circulated to conventional central-station-type fan-coil units located throughout the premises, some 50 units in all. However, the control tower is served by a high-velocity air system utilizing high-pressure inductor-type room units. A given drop of water in passing from a water chilling station to the farthest air unit and returning travels more than 4,000 ft.

Loading piers are served by a high-velocity air system emanating from fan-coil units. The only unusual feature is that the design permits pier spaces to be leased with heating and air conditioning, heating only or without either. A two-zone air distribution system is employed, an exterior zone serving airline offices and interior zone for the corridor. Ducts are above a suspended ceiling and have outlets in a modular pattern over the entire ceiling. Any diffuser can then be shut by the building management as desired by the tenant.

This flexible arrangement is necessary because it was not expected that the airlines would wish to air condition cargo handling spaces or where large overhead doors open to the outside.

(*Continued on page 42*)

For men who like to underbid their competitors...

(and make a nice profit, too)

Pioneer *VIBROmatic* Paver excels all others in uniform density and quality of mat

The Pioneer Bituminous Team

The PIONEER *VIBROmatic* Paver operates on an entirely new principle. Simple in design, and easiest-of-all-pavers to operate, yet it lays a mat of exceptional quality . . . *and lays it faster than any other paver yet built!*

Secret of this unusual performance is its revolutionary *VIBROmatic* oscillating screed action which, together with the high-speed, heated vibrating compactor, lays a smooth mat with fewer voids and more uniform density than any other paver.

Performance is just as outstanding at high speeds as low. The PIONEER *VIBROmatic* has laid smooth, even mats 1½" thick, 12' wide at a 73' per minute rate.

PIONEER HOT-MIX PLANTS are champions in *Mobility* and *Performance.*

First. Mobility. Only two main units; each complete on its own rubber-tired chassis. Those hours you'll save per move count up fast in dollars and cents.

Second. Performance. Measure it by output and you'll find PIONEER *Continuflo* plants delivering up to 150 tons per hour. Measure it by quality of product? You'll discover these modern plants give exact proportioning and uniformity that meets toughest specifications. Or economy? Savings of fuel and power, efficient recovery of fines, and low upkeep help you attain a low cost per ton.

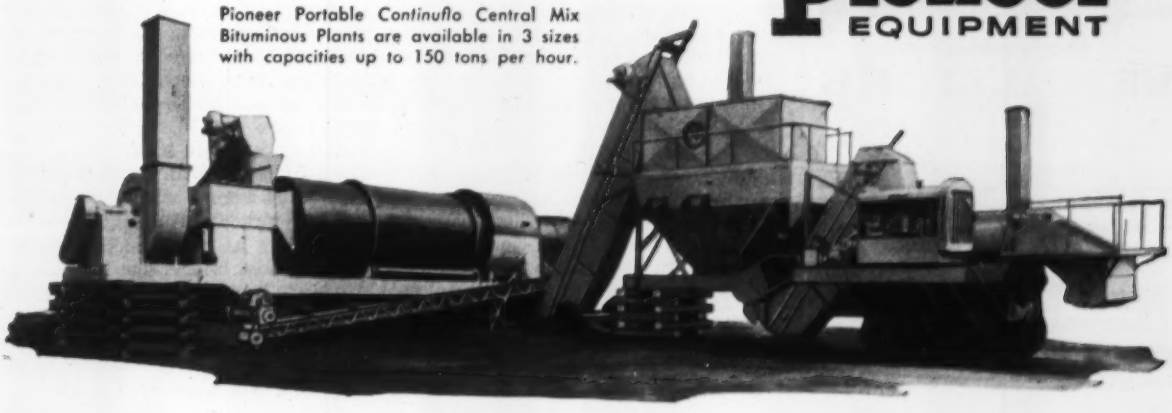
SPECIFICATIONS: BITUMINOUS PLANTS

	MODEL 51	MODEL 81	MODEL 102
Number of Units	2	2	2
First Unit	Mixer and gradation screen with 3-compartment bin	Mixer and gradation screen with 3-compartment bin	Mixer and gradation screen with 4-compartment bin
Second Unit	Drier and dust collector	Drier and dust collector	Drier and dust collector
Auxiliary Units	Feeder elevator (with necessary feeder), hot elevator and fines feeder (if desired)	Feeder conveyor (with necessary feeder), hot elevator and fines feeder (if desired)	Feeder conveyor (with necessary feeder), hot elevator, burner and fines feeder (if desired)
Rated Capacity	40-60 cu. yds./hr.	60-90 cu. yds./hr.	up to 150 tons per hour
Total Weight (Approx.) (Elec.)	80,000 lbs.	98,500 lbs.	143,000 lbs.
Approx. H.P. Required (Elec.)	120-130	145-170	270

For further information, write or call Pioneer Engineering, Division of Poor and Company, Inc., Minneapolis 14, Minnesota or your Pioneer Distributor.

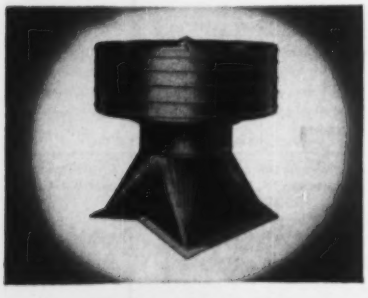
Pioneer EQUIPMENT

Pioneer Portable *Continuflo* Central Mix Bituminous Plants are available in 3 sizes with capacities up to 150 tons per hour.



To choose the right ventilators for your buildings ASK FOR THIS TEST AT YOUR OWN DESK

To help you specify the correct type of ventilators for the industrial, institutional or commercial buildings you design, H. H. Robertson Company has perfected a new ventilator testing machine for easy demonstration right on your office desk. *This machine is not a toy or a gadget!* It exactly duplicates actual conditions and records air movement through all types of ventilators on an anemometer. Use the coupon to ask for a demonstration or a recommendation on any problem you may now have.



Robertson VENTILATORS

H. H. ROBERTSON COMPANY
R-149 FARMERS BANK BUILDING
PITTSBURGH 22, PA.

☐ I would like a ventilator testing machine demonstration on or about

_____ DATE

NAME_____

ADDRESS_____

CITY_____

• **Structural work**—While the large majority of steel framed structures in the Texas area are welded, bolting was employed for the Love Field terminal building. The designers gave the contractor the option of field riveting, welding or bolting. The latter elected to prepare steel for riveting but changed to high-tensile bolts because riveting crews were scarce during the past summer.

Roofs over the ticketing and baggage wings are shaped in the form of two wide V's meeting at the building center line. Outer legs are cantilevered 20 ft beyond the exterior walls; the upsweeping eaves allow more natural light to enter. The double-V roof shape is achieved by splicing wide-flange sections and supporting them just to the inside of the bottom vertexes. Lightweight bar joists span between the rigid V-frames and support corrugated metal decking, on top of which is placed 3 in. of lightweight concrete.

Exterior walls of the main terminal building, the office wing and the loading piers are multi-colored, porcelain-enameled steel panels with aluminum windows. Spandrels are formed of an outside sandwich composed of a 16-ga enameled exterior sheet in a pan shape and a 26-ga zinc-coated inner sheet with asbestos-cement board between. This sandwich is backed by 1½ in. of glass-fiber insulation and an 18-ga interior finish sheet that takes paint readily.

Panels and windows are set in aluminum mullions formed with a front and rear retainer, which snaps in place. The panels, measuring 4x5 ft, are held by aluminum wedges, which may be removed so that any panel can be changed without disturbing other parts of the curtain wall.

• **Field layout**—The same good planning exhibited for the terminal building is evident in the overall airport layout. Love Field has one instrument runway at present. The terminal was spotted so that when air traffic warrants, a parallel 8,500 ft instrument runway can be located on the other side of the building, some 3,000 ft from the existing runway. This arrangement is expected to minimize interference between air traffic using the runways and eliminate interference from taxiing aircraft. The main runway is numbered 13-31.

Terminal building construction is 75% along and is scheduled for completion in June, 1957. Contracts for $4.9 million of paving work, including parking apron and taxiways, have recently been let. Also under construction at Love Field is a new operations base for Southwest Airmotive. New operations buildings and new hangars for American, Braniff and Delta Airlines are in the planning stage.

The architect-engineer firms of Borad & Nelson and Jack Corgan, both of Dallas, designed the terminal building, with Zumwalt and Vinther, Dallas, the mechanical engineers. The City of Dallas, through the Aviation Committee of its City Council, is administering construction. James V. Buckley, Inc., Dallas, is the city's transportation consultant. Paving work was designed by Forrest & Cotton of Dallas.

Terminal building contractors are T. C. Bateson, Dallas, general (with Mosher Steel Co. subcontracting the erection); Kieffer Plumbing Co., Dallas, Plumbing and Air Conditioning; Fischbach & Moore of Texas, Dallas, electrical; E. A. Reeder Construction Co., Dallas, site work; Hunter Havs, Dallas, elevators; Otis Elevator Company, escalators; and Hewitt Robbins, Passaic, N. J., moving walks. All are prime contractors and are being coordinated by Ali Shriro, project engineer for the engineers.

Highway Plan Calls for 51 Prestressed Bridges

The California Division of Highways has completed or has under construction a total of 51 prestressed concrete bridge projects. And design is completed or under way on 29 others.

The increasing rate at which California has been building prestressed bridges can be seen by a look at the 27 already completed. The first project was done in 1951. It was a pedestrian overpass adjacent to the Pasadena Freeway (ENR May 10, 1951, p. 40). In 1953 another project was completed in Fresno. Then in 1954 two more were finished; in 1955 nine were finished; and in 1956 a total of 14 prestressed projects were completed.

Biggest bridge built to date is the Richardson Bay Bridge on U. S. 101 in Marin County north of San Francisco (ENR July 29, 1954, p. 26). Its 18 spans include a total of 270 precast T-section girders, each 80 ft long. The girders are 4½ ft deep and include a T-flange 4½ ft wide. Biggest projects now under construction are a separation on U. S. 40 at Hercules and a bridge across the Santa Clara River at Saticoy. The Hercules job includes 17 spans with a total of 136, 80 ft precast T-shaped girders 3 ft 10 in. deep. The Santa Clara River Bridge includes 23 spans with a total of 184, 71 ft long T-shaped girders 3 ft deep. Also under construction as one project is a series of eight desert bridges that have precast slab decks spanning 30 and 40 ft and also precast substructures.

Many projects for which designs have been completed or for which plans are under way will be awarded in 1957.

Concrete treated with Columbia Calcium Chloride sets and reaches required strengths two to three times faster than untreated. It can be added to the mix at the plant or at the job site.

COLUMBIA CALCIUM CHLORIDE cuts days off the schedule by giving you stronger concrete faster

More contractors this spring than ever before are saving days on their schedules. How? By using concrete ready mixes with Columbia Calcium Chloride added. Why? Just look at what they get:

1. Faster initial set. Time is cut from 3 hours to 1 hour under normal conditions. When the temperature drops below 70°F, Columbia Calcium Chloride's effect is even greater.
2. Faster final set. The same ratio holds true; you get final set in 2 hours, rather than usual 6.
3. Accelerated early strength. Columbia Calcium Chloride treatment produces two-day strength in just 24 hours, 7-day strength in 3½ days.
4. Increased ultimate strength. Concrete cured with Columbia Calcium Chloride has 10 percent greater ultimate strength at the 5-year point than untreated concrete.
5. Improved integral curing. Columbia Calcium Chloride establishes favorable conditions for hydration during setting and hardening despite low humidity.

These specific advantages all add up to money saved on earlier form removal and less night finishing, in spite of cold nights. Despite its superior resistance to low temperatures, however, Columbia Calcium Chloride is not an anti-freeze. Normal cold weather protective measures should always be followed. But the protection time will be reduced greatly—often from 7 days to 3—when you use Columbia Calcium Chloride.

For more information, write today to Calcium Chloride Dept. at our Pittsburgh address.

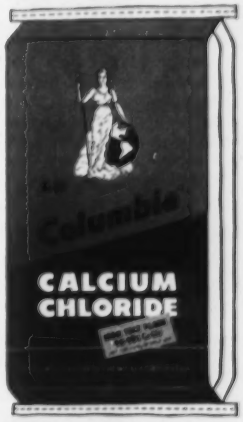
COLUMBIA-SOUTHERN CHEMICAL CORPORATION

SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY

ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati
Charlotte • Chicago • Cleveland
Boston • New York • St. Louis
Minneapolis • New Orleans • Dallas
Houston • Pittsburgh • Philadelphia
San Francisco

In Canada: Standard Chemical Limited and its Commercial Chemicals Division



NEW High Test Flake (95-98% $CaCl_2$) comes in 80 lb. bags that do the same valuable work as the standard 100 lb. bag of Regular Flake (77-80% $CaCl_2$).

The Beauty of Stainless Steel

COMPLEMENTS AND HARMONIZES WITH MATERIALS AT CLEVELAND'S NEW

Functional and decorative use of stainless steel is shown in this section of the main waiting room of Cleveland Hopkins Airport Terminal Building. Stainless sheet was used for columns and lockers. Furniture bases were fabricated from stainless steel tubing. Architects, Outcalt Guenther & Associates, Cleveland, Ohio; General Contractor, R. S. Ursprung Company, Cleveland, Ohio.

Strength, toughness, corrosion-resistance and lasting beauty were reasons for selecting stainless steel for both indoor and outdoor stair railings.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

OTHER CONSTRUCTION AIR TERMINAL

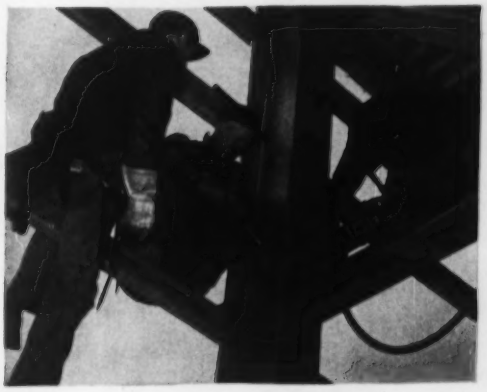
This magnificent $3,500,000 structure is another outstanding example of how stainless steel, with its lustrous beauty, can be used to both complement and harmonize with other materials of construction.

Cleveland Air Terminal architects have skillfully blended stainless steel with color-glazed brick, terrazzo, wood paneling, glass, and painted surfaces. Stainless not only adds to the over-all design, but also enhances the beauty of these other materials. And yet it does not compete for attention.

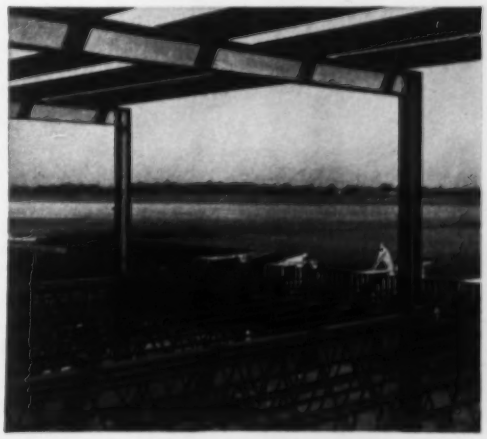
The architects also capitalized on stainless steel's strength and toughness to withstand the use and abuse of the millions of passengers and visitors who will pass through the terminal each year. Stainless steel was selected for furniture, baggage-delivery racks, baggage lockers, elevator doors and trim, ticket-counter shelves, stair railings, escalator, and for sheathing the supporting columns.

Reduced maintenance costs are an automatic benefit wherever stainless steel is used. It is easy to clean and keep clean. It offers stubborn resistance to rust and corrosion. Stainless will not discolor with age. It never needs painting. The beauty of stainless steel is enduring.

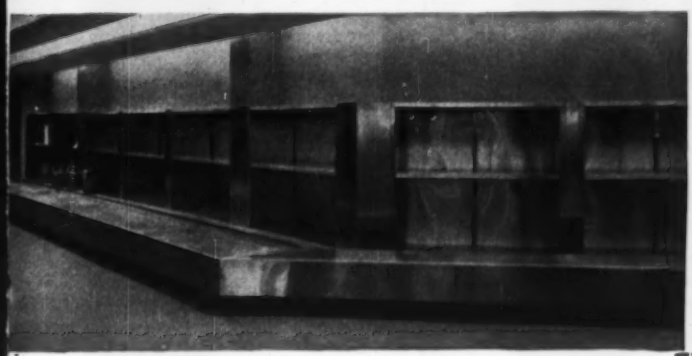
For more information and specifications on Republic ENDURO Stainless Steel for architectural applications, see Sweet's File or send coupon below.



AIR TERMINALS and other structures often go up faster and at less cost with Republic High Strength Bolts. Installation can be made without waiting for specialized riveting crews. Bolted construction provides a more positive and reliable clamping force than is ordinarily possible with rivets. The greater strength of a bolt gives it higher fatigue-resistance. Mail coupon for more facts on Republic High Strength Bolts.



CONSTRUCTION of Cleveland Air Terminal's West Concourse, shown above, was speeded by use of Truscon "O-T" Open Truss Steel Joists. These lightweight, strong, fire-resistant floor and roof supports lessen time and labor costs. They save material in supporting framework and foundations. See Sweet's File for specifications on "O-T" Steel Joists and other quality Truscon Building Products. Or send us the coupon.



AIR TERMINAL PASSENGERS coming into Cleveland pick up their baggage at this stainless steel delivery-counter. The wear-resistance of stainless makes this installation a particularly functional use of the metal. The design blends beautifully with surrounding components.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
Dept. C-3298
3117 East 45th Street, Cleveland 27, Ohio

Send more information on:

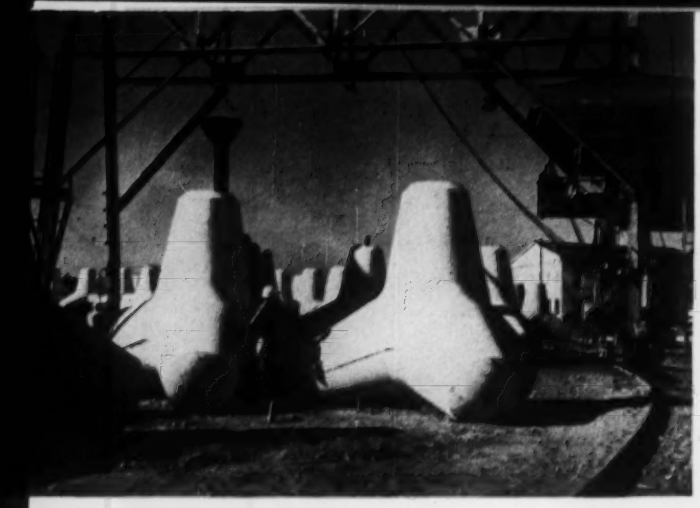
☐ ENDURO® Stainless Steel ☐ High Strength Bolts
☐ Truscon® "O-T"® Open Truss Steel Joists

Name_____ Title_____

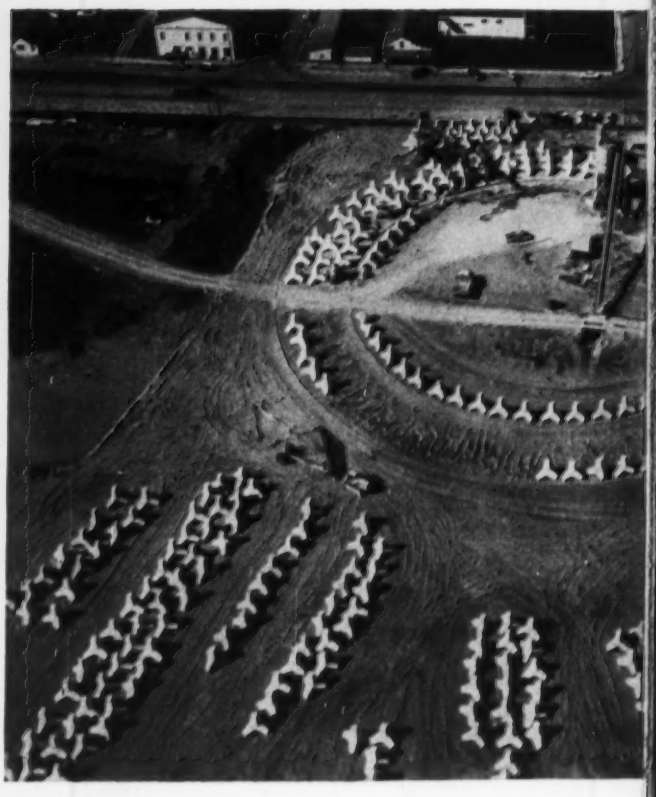
Company_____

Address_____

City_____ Zone____ State_____



FOUR-LEGGED CONCRETE BLOCKS are cast at Crescent City, Calif., for breakwater construction. The French-developed tetrapods weigh 25 tons, are 10½ ft high.



CASTING YARD includes a 400 ft dia track for a gantry that was fabricated especially for the job. Concrete plant is in the center. Storage yard in the foreground.

First installation in the U. S. of French precast breakwater protection units is underway at Crescent City, California

Tetrapods—Four Legs Against the Sea

Four-legged concrete blocks weighing 25 tons each are being used in construction of a breakwater at Crescent City, Calif.

This marks the first use in the U. S. of this type of block known as a tetrapod which was developed by French engineers and first used in North Africa (ENR Jan. 8, 1953, p. 32).

The tetrapod design was adopted by the San Francisco District, Corps of Engineers, for use at Crescent City after it was found nearly impossible to construct a breakwater that would resist the forces of the sea, using existing available rock. The scheme was first subjected to detailed investigation at the Waterways Experiment Station, Vicksburg, Miss. It was found that when properly placed on a carefully prepared slope and backing, and with sufficient thickness, tetrapods have the ability to dissipate wave energy, to resist overtopping and to resist displacement. The San Francisco District is also using this design for a breakwater at Kahului Harbor on the Island of Maui, T. H. (see p. 50).

The 25-ton tetrapods stand about 10.5 ft high when resting on three legs. Distance between end faces of any two adjacent legs is roughly 12.6 ft. The legs are positioned equilaterally.

Crescent City is located on the northern California coast some 17 mi south of the Oregon border. The harbor is used primarily for shipping lumber and receiving petroleum products.

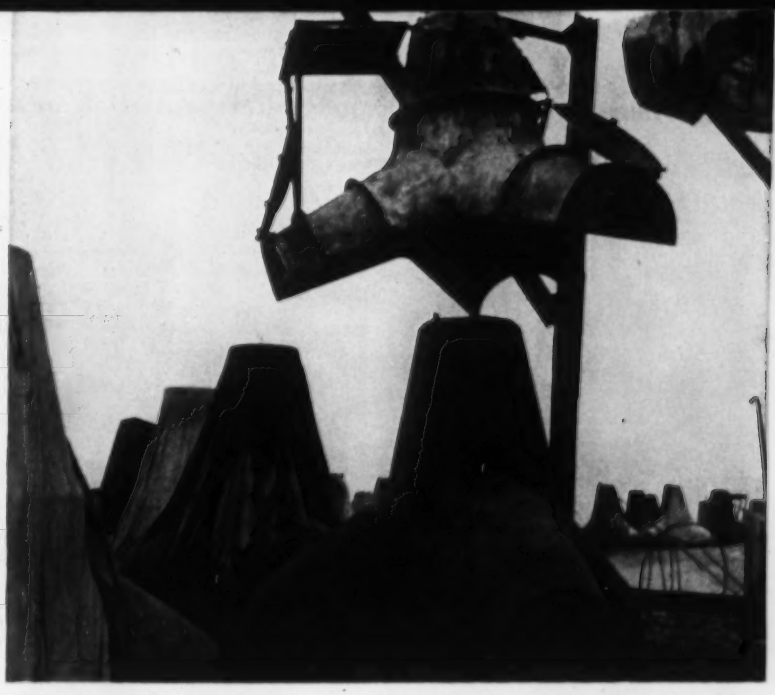
Seven Tetrapod Advantages

1. Facing is permeable, thus reducing damaging back pressure and wave reflection.
2. Facing is rough, thus dissipating wave energy.
3. Facing is stable by virtue of interlocking action of units.
4. Facing can have a steep slope, thus reducing width and volume of breakwater.
5. Units are stable by virtue of low center of gravity.
6. Units require less concrete, weigh less than blocks.
7. Units do not require careful placing.

• **Breakwater damage**—An initial 3,000 ft outer breakwater was completed under Corps of Engineers direction in 1931. The 1945 River & Harbor Act provided for a 2,700 ft extension. As a result, the breakwater grew to a length of 4,200 ft by the end of the 1949 construction season. Considerable damage to the breakwater as well as to facilities in the outer harbor occurred during the following winter season.

To strengthen the breakwater and reduce overtopping, authorization was obtained for addition of a 22 ft wide concrete cap with crest at El 20 MLLW. During the 1950 construction season most of this cap was placed, and the damage incurred during the previous winter was repaired. But the following winter further severe damage resulted. On the outward 500 ft of the breakwater the concrete cap and armor stone were displaced down to about mean-low-lower-water. The concrete cap inshore of this was not displaced, but harbor-side armor stone on the next 700 ft suffered substantial loss.

In view of the increased difficulty of obtaining large-sized breakwater



STEEL FORMS come apart at flange along each of the bottom legs. For each top form five sets of bottom forms are provided. Top weighs 3,400 lb; bottom weighs 2,200 lb.

stone within an economical hauling distance of Crescent City and the seeming impossibility of constructing a stone armored seaward slope that would withstand the severe wave action in this area, Corps of Engineers officials decided that a completely new approach to the problem was required. Studies showed that strengthening the 800 ft of breakwater, which suffered harbor-side armor rock loss, would involve difficult design and construction problems. And other studies indicated that the most severe storm at Crescent City in the past 20 years resulted in waves estimated to be 26 ft high in deep water. It was also estimated that waves 20 ft high lasted about 34 hours during that storm. Further analysis indicated that waves with a maximum height of 33 ft could occur at the breakwater site.

Complicating the design studies were these factors: (a) maximum average weight of stone, which can be quarried economically in the Crescent City area, is about 12 tons; (b) use of floating plant for breakwater construction at Crescent City is not practical, which means that all stone must be placed by equipment operating from the breakwater crown; (c) available equipment is capable of placing 12 to 15 ton stone a maximum distance of 120 ft from the center line of the breakwater; and (d) water depth at critical area of the breakwater averages 35 ft at high tide.

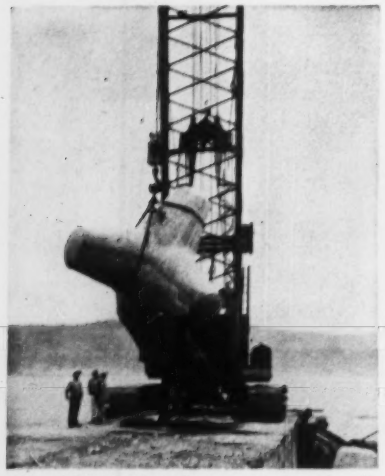
To meet these conditions current design procedures (Iribarren's formula)

CONCRETE IS PLACED into the forms from 4 cu yd bucket moved by gantry.

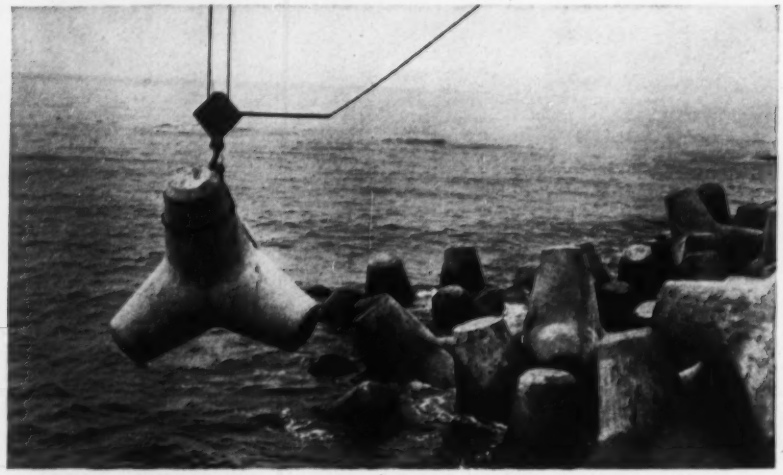
CONCRETE IS VIBRATED by pneumatic vibrator after it is placed in 2-ft lifts.

TETRAPOD IS HOISTED into heavy rear-dump truck for transport to the breakwater.

. . . Where rock fails, tetrapods offer protection against the sea



CRAWLER CRANE was used to handle tetrapods on the breakwater project.



TETRAPOD IS LOWERED into the ocean for placing in the breakwater. Note special cable for quick release of the sling.

TETRAPOD-CLAD BREAKWATER reaches far out into the Pacific to protect Crescent City piers from the forces of the sea.

predicted that the weight of cap stone required was in the 35 to 60-ton range for the slight to no damage criteria. This, of course, is considerably in excess of the 12 ton maximum size stone available.

• **Tetrapods investigated** — Faced with this situation, the Corps of Engineers turned to a study of the feasibility of substituting tetrapods for armor stone at Crescent City. After model tests at the Waterways Experiment Station, it was decided that with proper design and construction a stable section could be provided for the breakwater with tetrapods.

The section, as designed, provides for a rubble mound protected with a double layer of 25 ton tetrapods on the seaward slope and around the outer end of the breakwater. The double layer of tetrapods is placed on a slope of 1 on 1¼ and results in a total thickness of about 15 ft. In placing the tetrapods every effort is made to obtain the maximum possible density. The harbor side of the breakwater is protected with stones weighing not less than seven tons each, with the average weight of all pieces not less than 12 tons. To resist the jetting action of waves overtopping the breakwater, the largest of these stones are placed between El −10 and El +10 MLLW.

Based on this design, a $1.3 million contract was awarded to Peter Kiewit Sons' Co. First tetrapod was cast at Crescent City on June 14, 1956. Total number required for extension of the breakwater is 1,630. The contract calls for completion by Oct. 15, 1957.

Superiority of Rubber-Tired Bituminous Paver Finisher...Proved Again!

8 Blaw-Knox Model PF-90's Working on Florida Turnpike

The Model PF-45 is on Rubber Too!

The same advantages of rubber-tired mounting apply to the little brother to the Model PF-90. The smaller Blaw-Knox Model PF-45 Black Top Paver is also mounted on wheels and designed to handle smaller paving jobs such as parking lots, driveways, streets and alleys.

Low maintenance, speed and maneuverability of rubber-tired mounting have made the Blaw-Knox Bituminous Paver Finisher the first choice of contractors on Florida's Sunshine State Parkway, a 110-mile turnpike, when they have to order new equipment. The number of these high production units has steadily increased to 8 since the first Blaw-Knox PF-90 laid the first yard of asphalt paving on this job. Approximately 75% of the bituminous pavement on this turnpike was laid by these PF-90's.

Contractors who have worked on the nation's biggest bituminous paving projects have learned that with the Blaw-Knox Model PF-90 Bituminous Paver Finisher mounted *on wheels they can definitely pave for less.* Rubber-tired mounting reduces maintenance by eliminating 500 to 600 exposed metal wear-parts common to crawler mounted pavers and by absorbing vibration which also causes wear and tear on a machine.

Wheel mounting also speeds returns for restarts to assure a hot longitudinal joint. Other features which contractors like include the extra wide paving widths of 14', 15' and 16', the big 10-ton capacity hopper and the rugged construction.

For complete information on these high capacity bituminous pavers see the Blaw-Knox Bulletin No. 2475. You can get it at your nearest Blaw-Knox Distributor or by writing directly to Blaw-Knox.

BLAW-KNOX COMPANY

Construction Equipment Division

41 Charleston Ave., Mattoon, Illinois

• **Simplified forms**—In the construction operation the only major deviation from the French patent came during the fabrication of the forms. The French forms are made up of four identical and interchangeable metal shells connected by a number of screw clamps, with the bottom legs sealed by end plates also connected with screw clamps. But Berkeley Steel Construction Co., Inc., of Berkeley, Calif., subcontractors for the steel forms, designed a two-piece form which consists of a bottom shell—similar to one of the French forms—and a single-piece top that performs the function of the remaining three French shells. Advantage of this form lies in conserving labor in connecting and removing the forms and ease of handling.

The top part of the form weighs 3,400 lb and the bottom 2,200 lb. The form comes in sets composed of one top and five bottoms. And seven complete sets of forms are being used to cast the necessary number of tetrapods at Crescent City. With single shift operation, seven tetrapods can be cast each day. With the use of a 1% calcium chloride accelerator and a double shift operation, fourteen tetrapods can be cast daily if necessary.

• **Casting the tetrapods**—The contractor set up a circular casting yard for manufacture of the tetrapods. Around the perimeter of the 400-ft dia yard runs a track system for a traveling gantry crane. The crane—fabricated for the job—is used to move concrete to the forms for placing and to move the completed pods to the storage section of the yard. In the center of the yard stands a semi-automatic concrete batch plant with a 34-cu ft paver as a mixer. The traveling bucket has been removed from the paver and the concrete is placed using two 4-cu yd buckets that are loaded in a concrete well in front of the mixer.

The tetrapods are cast using no reinforcing of any kind and depending solely upon the concrete for strength and mass.

Concrete mix is proportioned by weight as follows: 1.0 part portland cement (Type II), 1.61 parts sand, 1.77 parts fine aggregate (No. 4 screen to ¾ in.), 1.90 parts medium aggregate (¾ in. to 1½ in.), 2.66 parts coarse aggregate (1½ in. to 3 in.), and 0.41 parts water. Water cement ratio is 4.65 gal per sack. Cement factor is 4.82 bags per cu yd. Sand to aggregate ratio is 21% by volume. Entrained air percentage is 3.7%.

Where Tetrapods Have Been Used

Casablanca, Morocco (1950): **260 tetrapods of 16 tons.**
Sousse, Tunisia (1952): **1550 ts of 4 tons.**
La Nouvelle, France (1953): **65 ts. of 16 tons.**
Safi, Morrocco (1955): **1400 ts of 25 tons.**
Algiers, Algeria (1955): **60 ts of 40 tons.**
La Nouvelle, France (1955): **140 ts of 16 tons.**
Bastia, Corsica (1956): **800 ts of 16 tons.**
Wellington, New Zealand (1956): **620 ts of 16 tons.**
Kanazawa, Japan (1956): **225 ts of 2.2 tons.**
Adaka, Japan (1956): **104 ts of 2.2 tons.**
Gozu, Japan (1956): **1042 ts of 3.5 tons.**
Yagi, Japan (1956): **381 ts of 2 tons.**
Noshiro, Japan (1956): **430 ts of 3.5 tons.**

Where They Will Be Used

Bastia, Corsica: **581 ts of 16 tons.**
Mahdia, Tunisia: **1700 ts of 4 tons.**
La Rota, Spain: **8935 ts of 8.16 and 25 tons.**
Funchal, Madeira: **4250 ts of 16 tons.**
Venice, Italy: **550 ts of 12.5 tons.**
Amasra, Turkey: **1600 ts of 16 tons.**
Wick, Scotland: **625 ts of 8 tons.**
Crescent City, Calif.: **1000 ts of 25 tons.**
Kahului, Hawaii: **600 ts of 33 tons.**
Vera Cruz, Mexico: **Unknown number of 10-ton tetrapods.**

And in another part of the world . . .

Tetrapods Come to Hawaii

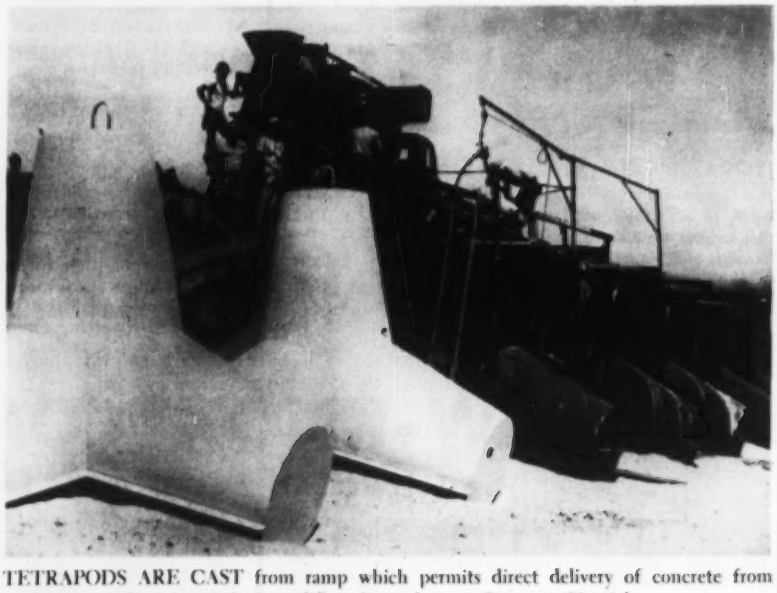
The other U. S. use of tetrapods—in Kahului Harbor on the Maui Island, Territory of Hawaii, as referred to in the above article—involves units larger than those at Crescent City—33 tons as against 25 tons. But their choice was based on the same situation faced at Crescent City—a conventional type breakwater, which repeatedly failed under wave action.

Contractor for the $1.2 million Kahului project was Hawaiian Dredging and Construction Co., Ltd., of Honolulu. Each tetrapod required 15.8 cu yd of concrete, and production averaged six tetrapods a day. A total of 600 was required.

In this case the forms included four pieces plus end plates. The top three form plates were removed together five days after casting. Then the tetrapod was lifted in compression from the bottom form and moved to the storage area. Total curing time for each pod was 28 days.

The Kahului tetrapods were cast beside a ramp that accommodated truck mixers. And they were placed by floating equipment instead of by equipment operating from the breakwater crown as at Crescent City. Finally, all of the units for Kahului had a heavy ring bolt cast in the top leg to which the hook of a floating crane could be attached.

Using the existing stable parts of the breakwater, plus anchor mounds of 12-ton basaltic lava rock quarried on Maui, placing of the 600 tetrapods was completed in January. According to E. C. Gray, Hawaiian Dredging Co. vice president in charge of waterfront engineering, the project has already weathered two severe Pacific storms without damage.



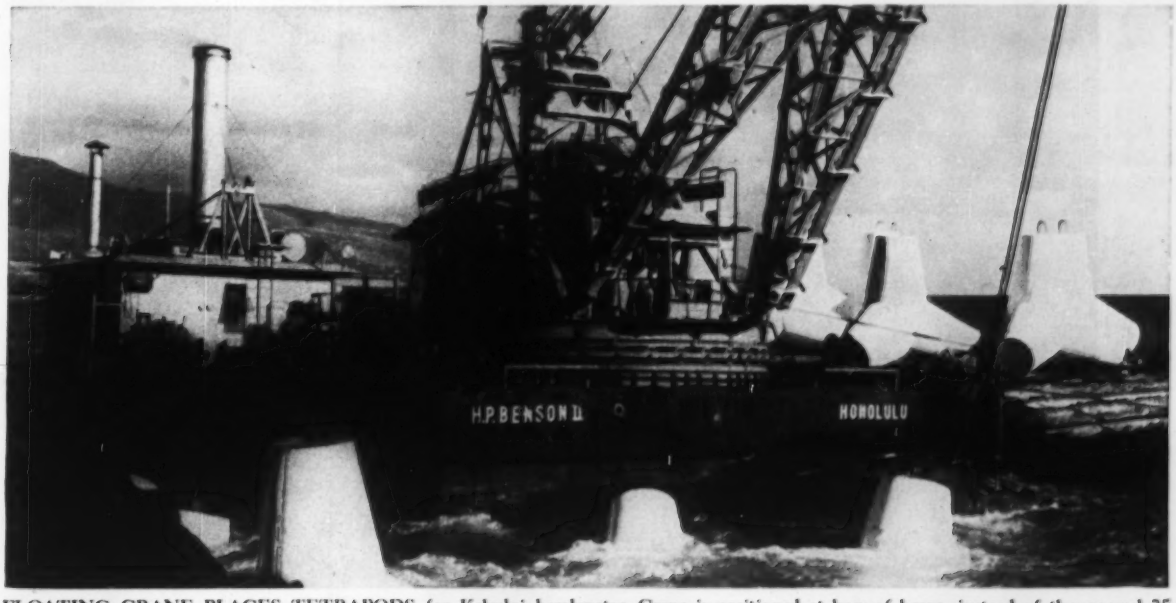
TETRAPODS ARE CAST from ramp which permits direct delivery of concrete from truck mixers. Forming technique differs from that on Crescent City job.

The mix at placing has a 3-in. slump. Placing is in lifts of about 2 ft with each lift vibrated by a 6-in. pneumatic vibrator before placing the next.

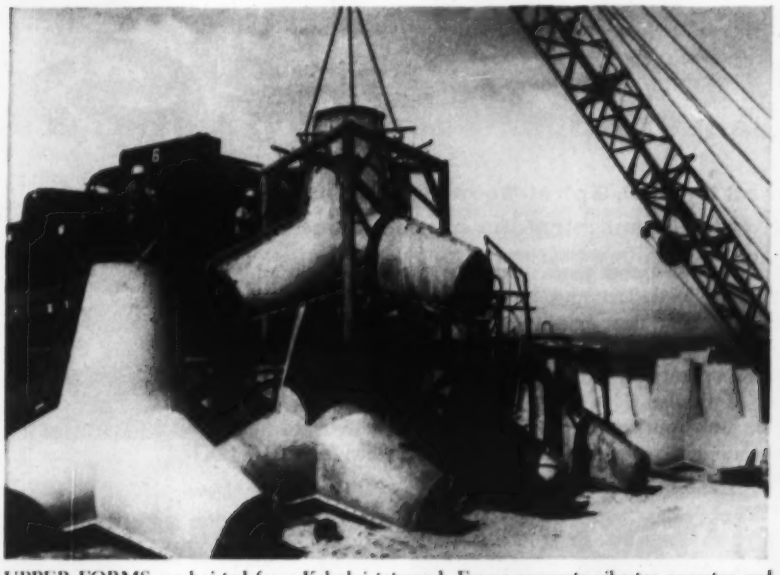
In the casting yard, the tetrapods are moved using a sling. On the breakwater, a loose sling around two legs and the central body is used. This sling is equipped with a quick-release mechanism designed to facilitate placing the tetrapods in the water.

During the first construction season, a number of tetrapods were cast with lifting eyes in one leg to facilitate handling. These pods are being used for temporary end protection now that construction has ended for the year. During the 1957 construction season they will be removed and salvaged for normal placing along the seaward face. Placing of the tetrapods was begun in August, 1956, and continued until late fall when operations were halted for the winter.

Design and construction of the Crescent City Breakwater is under the direction of the San Francisco District, Corps of Engineers, Col. John A. Graf, district engineer. Lt. Henry A. Flertzheim, Jr., was in charge of the north coast regional office for the district during most of the 1956 construction season. Resident engineer for the Corps of Engineers is Gordon W. Stark. Project manager for Peter Kiewit Sons' Co. during the 1956 season was William J. Cole. The tetrapod design was developed in the Laboratoire Dauphinois d'Hydraulique of the Etablissments Neyrpic, Grenoble, France. Inasmuch as the Crescent City project involved the first use of tetrapods on either the North or South American continents, Neyrpic waived royalty payments for this one job.



FLOATING CRANE PLACES TETRAPODS for Kahului breakwater. Crane is positioned at bow of barge—instead of the normal 25 ft from the bow—for maximum lift and minimum reach. Note ring bolts in top leg for handling by crane hook.



UPPER FORMS are hoisted from Kahului tetrapod. Frame supports vibrator operator and other concreting operations. When moved to storage, the pods are lifted by bottom forms.

RUBBER TIRED RIG, specially adapted for the work, moves tetrapod to storage area.

Socony Mobil Announces

New

MULTIPURPOSE-TYPE TODAY'S HIGHER SPEEDS

NEW Mobilube GX

Recommended for all Hypoid, Spiral-Bevel and Double-Reduction Axles. Also all mechanical transmissions of cars, trucks and buses.

You've seen it happen! The ever-higher road speeds . . . the ever-heavier payloads that put greater strain on today's commercial fleet axles and transmissions.

These increasingly severe operations led to the development of New Mobilube GX—the first commercially available multi-purpose-type gear lubricant with a wide enough performance range to protect axle and transmission under the severest operating conditions.

In fact, tests by vehicle manufacturers and users prove conclusively the ability of New Mobilube GX to provide maximum protection to gears and bearings in all services!

For across-the-board protection for your fleet depend on New Mobilube GX!

Mobil **SOCONY MOBIL**

Leader in lubrication for over 91 years

GEAR LUBRICANT FOR AND HEAVIER LOADS

Provides Widest Range of Protection yet for every type of Drive Axle and Mechanical Transmission

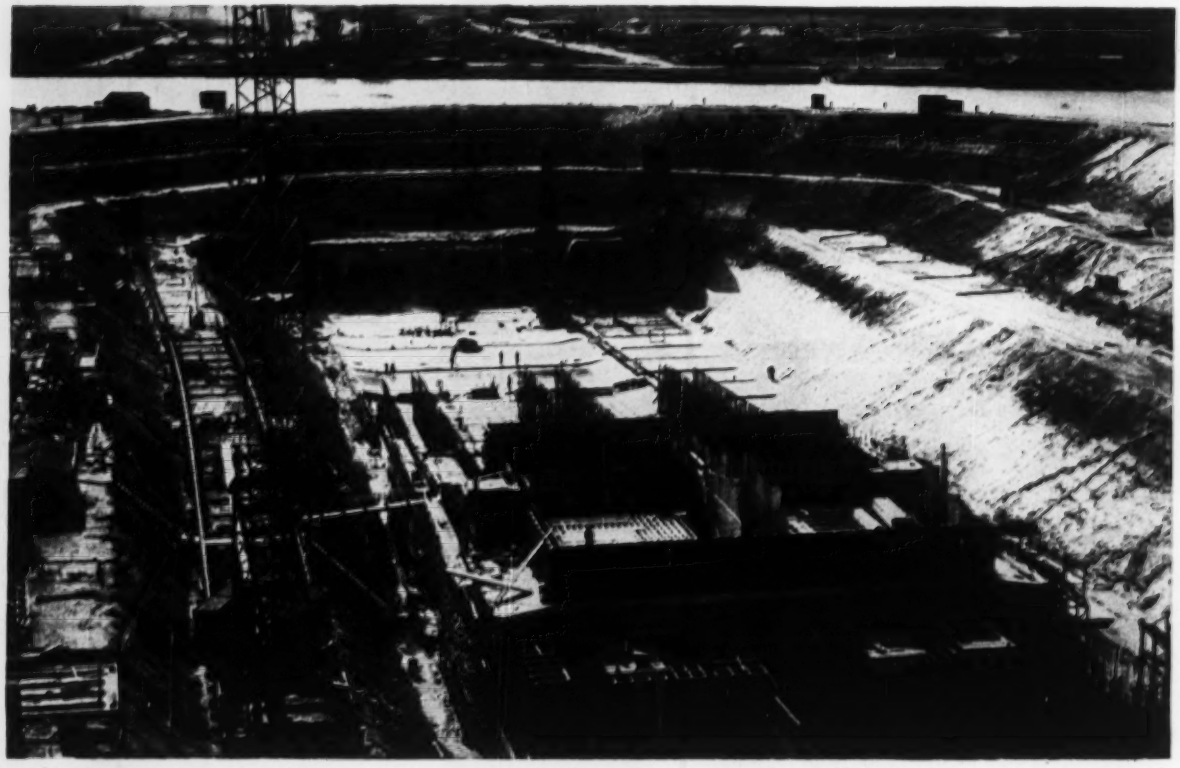
New Mobilube GX passes automotive manufacturers' high-speed and high torque super-performance tests. Gear tooth surfaces were in excellent condition after tests due to this outstanding protection.

100,000-mile fleet highway service, and torture tests over logging roads with up to 90-ton payloads, prove Mobilube GX protects gear tooth and bearing surfaces under severest service conditions.

Correct Lubrication

A proved program to cut maintenance costs!

SOCONY MOBIL OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION



OPEN TRENCH for the second half of the tunnels under the North Sea Canal at Velsen, Holland. The four-lane motor-vehicle tunnel is at the left. In foreground is base for the ventilating shafts.

Building a Tunnel Under a Busy Canal

Now nearing completion at Velsen, Holland, are two tunnels under the North Sea Canal which were built entirely in an open trench without serious interference with ship traffic between Amsterdam, island on the Zuiderzee, and Ijmuiden, the port on the North Sea.

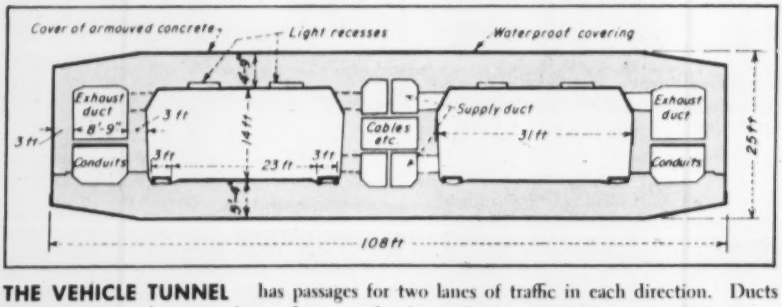
One is a double-track railway tunnel and the other is a 4-lane tube for motor vehicles. The two are roughly parallel and were built at the same time in a single trench.

Work on the tunnels was begun in 1941, but a few months later an injunction against all construction was issued by the German occupation army, and construction on the tubes was not resumed until 1952. Both tunnels are expected to be in service by the end of this year.

Both tunnels are of reinforced concrete, built with steel forms wherever the possibility of frequent reuse made that practical.

Waterproofing consists of two layers of asphalt-impregnated felt and a layer of asbestos felt, all protected by a thin layer of reinforced concrete.

At construction joints, three layers of sheet copper were included in the waterproofing.



THE VEHICLE TUNNEL has passages for two lanes of traffic in each direction. Ducts for fresh air are between the roadways, and exhaust ducts are in the outer walls.

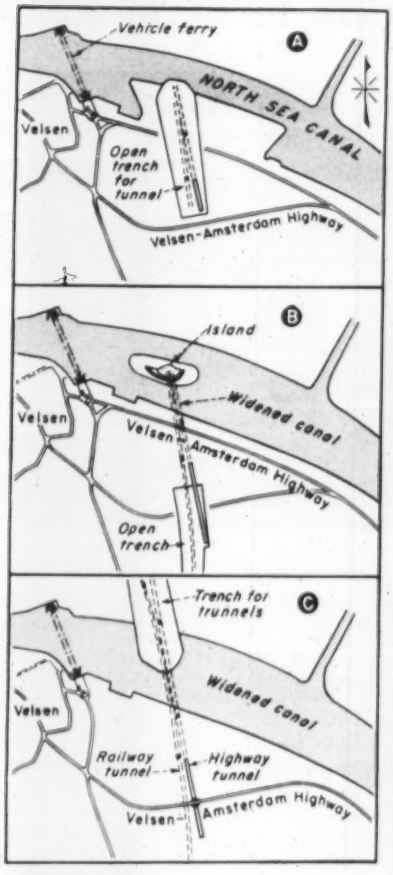
• **Vehicle tunnel**—With its open approaches, the vehicle tunnel has a total length of 5,380 ft, of which 2,520 ft is the closed underground section. It is notable that both roadways and the ventilating ducts are contained in a single structure 108 ft wide and 25 ft deep.

Each roadway has a width of 7 meters (23 ft). At each side of each pavement is a concrete slab one meter wide that serves as a cover for the drainage channel, a low curb and an emergency walkway. This walkway is wide enough and low enough to permit a car door to be opened over it. Also, being low, it is expected to eliminate the "fear strip" that reduces the used width of roadways in vehicle tunnels where a high walkway or a wall stands close to the pavement.

Each roadway passage has a total width of 31 ft and a clear height of 14 ft. The maximum grade is about 3%.

Lighting is by fluorescent tubes set in recesses in the ceiling, which is covered with sound absorbing material painted a dark color.

A dark color reduces maintenance costs and is expected to make the ceiling appear higher than it actually is.



THREE STAGES in carrying the open trench across the North Sea Canal without closing it to traffic. The canal was widened as part of the operation.

Sidewalks are to be painted a soft yellowish green which has a light reflecting value close to white. Here again, the color is expected to give the effect of greater width.

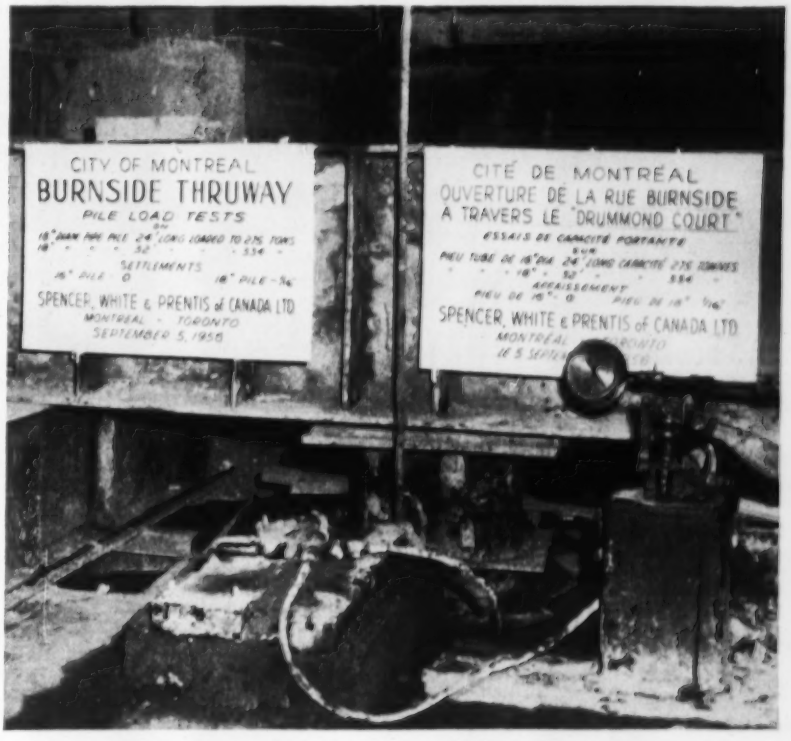
At the portals, where the transition from natural light to artificial light always is troublesome, a novel experiment is being tried. A latticework of concrete diaphragms has been built over the first 427 ft of the open approaches to serve the dual purpose of providing lateral support for the high sections of the sidewalks and to shade the pavement. These diaphragms are deep enough to insure that no sunlight falls on the pavement.

In addition, close to the portals the diaphragms are to be painted black, farther out they are to be gray, and finally white, thus varying the quantity of reflected light reaching the roadway.

• **Ventilation**—Fresh air is to be supplied to the vehicle tubes from ducts between the passageways; vitiated air will be drawn off through ducts in the outer walls. Ventilating shafts and fans are located at about the midpoint be-

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

NOTEWORTHY LOAD TEST IN COMPLEX PILE-DRIVING JOB



Project: Alteration of Drummond Court for new roadbed.
General Contractor: J. P. Cartier, Ltd., Montreal, Canada.
Engineers: Surveyor, Nenninger & Chenevert, Montreal, Canada.

Our Canadian affiliate performed this work, the purpose of which was to alter a building to permit a street to pass through. More than a hundred piles were driven, 33 of them indoors with limited headroom.

Under these difficult conditions, the load test results (see photo above) were as follows:

Net settlement, 16-inch pile—0"
Net settlement, 18-in. pile—1/16"

Though these particular results are exceptional, they do come out of a general background of *consistently* high standards in complex pile-driving work.

On request, we will be glad to tell you about the experience, the methods and the specially-built equipment which we have available for dependable handling of your pile-driving problems.

CATALOGUE ON REQUEST

Spencer, White & Prentis INC.

FOUNDATIONS · PILING · UNDERPINNING · SHORING · COFFERDAMS · SPECIAL SERVICES

10 EAST 40th STREET, NEW YORK 16, N. Y.

DETROIT: 2033 PARK AVE. • CHICAGO: 230 NORTH LaSALLE ST. • WASHINGTON, D. C.: TOWER BLDG.
OF CANADA: 700 BAY ST., TORONTO • 2052 ST. CATHERINE ST. WEST, MONTREAL

FAST, LOW-COST WAY TO INSTALL PIPE . . .

push it under streets, roads, tracks, lawns with a timesaving

GREENLEE HYDRAULIC PUSHER

Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.

Two feet per minute average pushing time

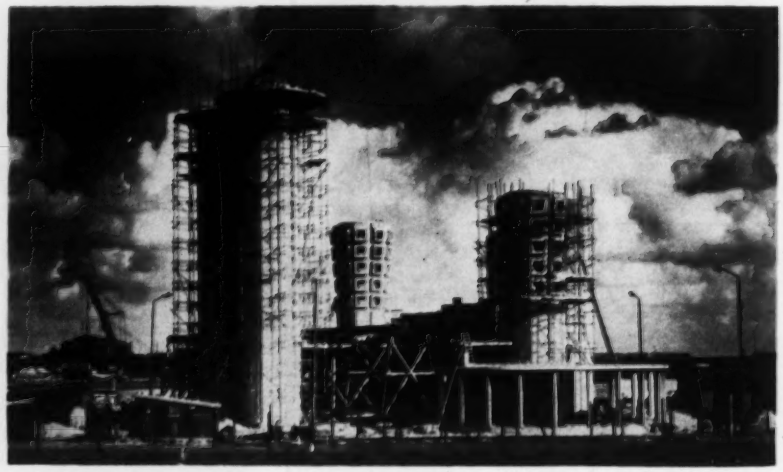
GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

GREENLEE

GREENLEE TOOL CO.

2223 Columbia Avenue • Rockford, Illinois

. . . Building a tunnel under a busy canal



VENTILATING TOWERS for the motor-vehicle tunnel. Low stacks are intakes and high stacks are exhausts.

tween the center of the closed section and the portals.

No artificial ventilation has been provided for the railway tunnel as it will carry electrified lines, and the plunger effect of trains is expected to provide adequate movement of air. However, ventilating shafts have been built at about the third points of the closed section of the tunnel and fans can be placed in them if needed.

• **Railway tunnel**—The double-track railway tunnel is much smaller in cross section than the vehicle tunnel but is longer due to its flatter approach grades (about 1.6%). Its outside dimensions are 40x23 ft, and its total length is 10,577 ft, of which 6,666 ft is closed. This closed section has an internal height of 18 ft above top of rail and a width of 30 ft, which is sufficient for an inspection walkway along one side of each track.

• **Construction in open trenches**—The tunnels were built under a narrow section of the North Sea Canal that was to be widened. The widening was to be done on the south side of the canal where a long point projected past midpoint of the final width of the widened channel. That condition facilitated construction by the open-pit method.

For the first stage of construction, a wide trench was dug south of the canal along the line of the proposed tunnels, as far as the Velsen-Amsterdam highway. The forward end of this trench, protected by sheetpiles, was carried out through the area where the canal was to be widened and far enough into the existing channel to permit the midpoint of the tunnels to be exposed. Wallpoints were used to keep the excavation dry.

After the tubes in this trench had been built, a sheetpile ring was driven around their northern ends and all but the southern end of the trench was backfilled.

Then traffic from the Velsen-Amsterdam highway was diverted to a new highway across the refilled trench near the canal, and digging the trench for the remaining part of the southern sections of the tubes was begun. At the same time dredges were widening the canal, leaving the sheetpile ring as an island in the canal.

For the final stage, traffic in the canal was diverted to the new channel and a cofferdam was then constructed out from the north side of the canal to the island.

When it had been tied in to the bank, the trench for construction of the northern ends of the tubes was dug. Upon completion of the link with the southern sections of the tubes the trench near the canal was backfilled and the cofferdam extending out into the canal was removed.

• **A water problem met**—Because it is planned ultimately to deepen the canal to 51 ft (the level of the lock sill at Ijmuiden), the low point of the tunnels had to be 84 ft below the surface of the canal.

That meant cutting through a bed of clay 53 ft below the surface, which isolates the fresh water in the sands below the clay bed from the brackish water in the soil above. Industries in the Velsen region depend on the lower beds for fresh water.

To avoid contamination of the freshwater zone, in excavating the trenches for the tubes, the clay was stockpiled and later was used to restore the clay bed when the trenches were backfilled.

Heaped loads up to 25 cu. yds. were easily handled in fast time by this DW21-No. 470 Lowbowl Scraper for L. G. Arnold, Inc. Other Caterpillar-built units in the company's line-up include a D9 used as pusher; one non-current DW21; two D8s; two No. 12s; one D6 with tamper; one D7 with Bulldozer and a No. 80 Scraper.

"OUTPRODUCED BY FAR ANY OTHER MACHINES ON THIS JOB"

Phil Dudenhoefer, grade foreman, L. G. Arnold, Inc., Eau Claire, Wisconsin

CAT* Lowbowl Scraper, push loaded by a D9, set the following pace on relocation of U. S. 53, Wisconsin:

1. **Averaged 12 to 15 minutes a trip with heaped loads on a three-mile round-trip haul.**

2. **Loaded sandy gravel in 70 seconds and topsoil in 45 seconds.**

Here's more proof that Caterpillar Lowbowl Scraper design really pays off on the job. The proof comes from F. L. Carr, Vice-President, and Phil Dudenhoefer, grade foreman, of L. G. Arnold, Inc.

Quoting F. L. Carr: "The new DW21 and D9 pusher have more than lived up to all of our expectations. The lowbowl design of the new scraper has even improved the easy loading feature of Caterpillar-built hauling equipment."

Quoting Phil Dudenhoefer: "In my 28 years in this business, I've seen all sorts of earthmoving machines, and Caterpillar beats them all. As grade foreman, I've got both feet right down in the dirt where I observe and record the output and performance of every machine. I'll say this: the DW21 and No. 470 Lowbowl Scraper with the D9 pushing outproduced by far any other machines on this job!"

The job: The relocation of about 10 miles of U. S. 53 between Eau Claire and Chippewa Falls, which involved the handling of 78,059 cu. yd. of borrow (sandy gravel), 42,901 cu. yd. of unclassified and 93,272 cu. yd. of overburden (topsoil). The Caterpillar DW21-No. 470 Lowbowl Scraper (struck capacity 18 cu. yd.), carrying heaped loads up to 25 cu. yd., made four trips an hour on a three-mile round-trip haul. Loading time, with the D9 pushing, averaged 70 seconds for sandy gravel and 45 seconds for topsoil.

On job after job, under varying conditions, the Cat Lowbowl Scraper is showing its heels to other earthmovers. Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you *facts* and *figures* comparing its performance with other units.

For *proof* that it will pay you to put DW21-No. 470 Lowbowl Scrapers on your job, see him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED— THE HARD WORK

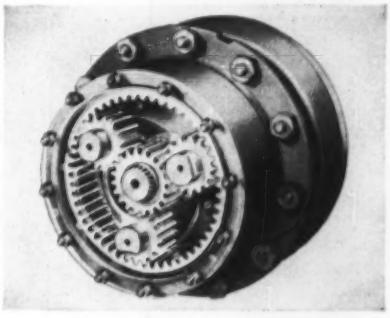
Announcing

AUTOCAR

A rugged off-highway dump truck with planetary-gear rear axle . . . capable of handling 15-ton payloads at speeds up to 39 mph

the NEW

AP-15



THE HEART OF IT is the planetary-gear rear axle. A "sun" gear at each end of the rear axle shaft meshes with three pinion or "planet" gears which in turn help drive the rear wheels.

AUTOCAR TRUCKS

Autocar Division of the White Motor Company
Exton, Pa.

Autocar

WHAT ARE THE ADVANTAGES OF THE AUTOCAR PLANETARY AXLE?

1. First and foremost, it provides long gear and shaft life for a giant truck.
2. It decreases torque load on axles and differential.
3. Owing to multiple gear-tooth contacts, it provides high torque capacity.

GOOD GROUND CLEARANCE, TOO. By dividing the axle ratio between the gear carrier mounted at the center of the rear axle and the planetary reductions at the outer ends we reduce the main drive gears in diameter and gain substantially greater ground clearance under the housing bowl.

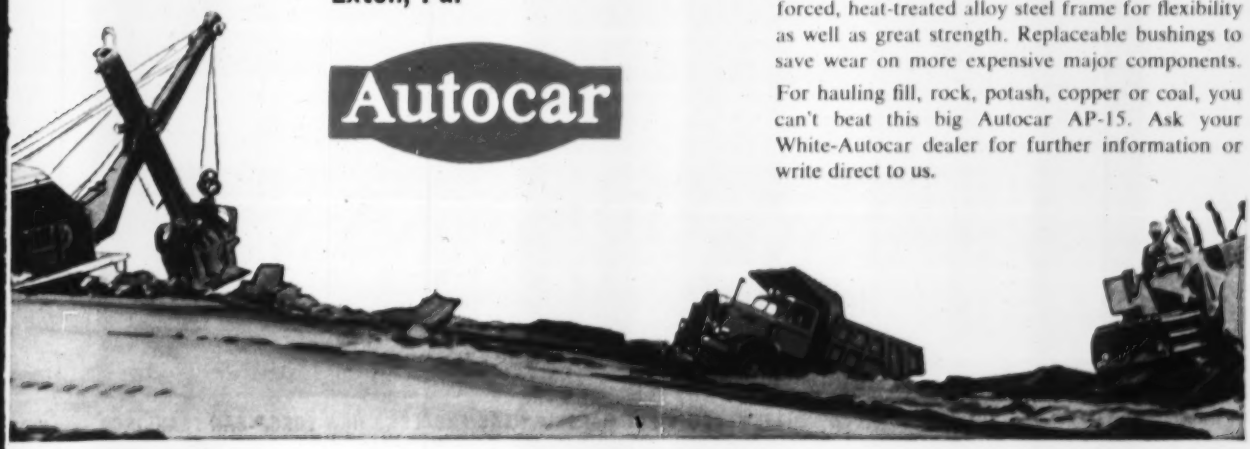
15 TONS AT 39 MPH. The AP-15 hauls its big payload at 39 mph. It permits a fast trip cycle and thus hauls many more tons per working day.

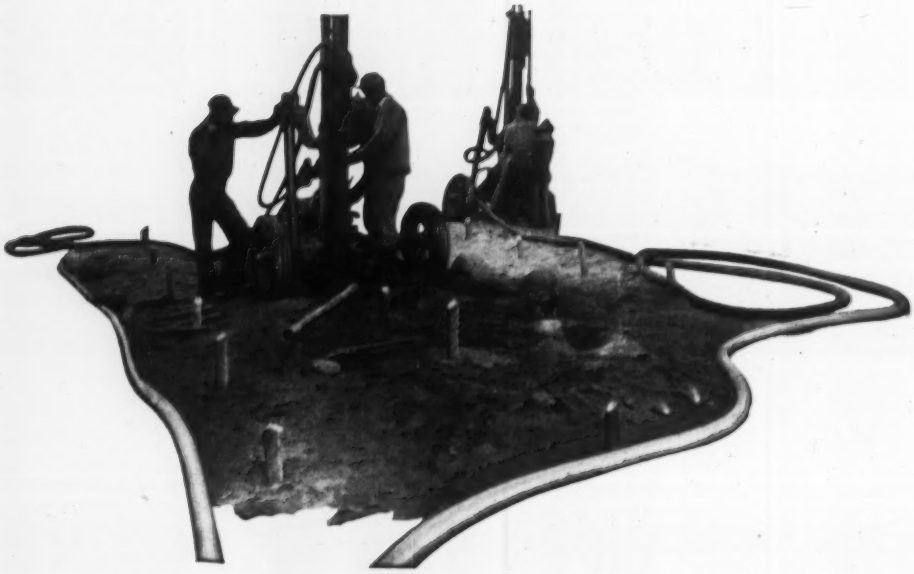
AUTOCAR DRIVER CAB AND POWER STEERING make the AP-15 easy on the driver. The Driver Cab with its fully adjustable seat, form-fitting back, and accessible controls permits the driver to handle this hardworking truck all day long and like it.

AND, THIS AUTOCAR IS BUILT TO LAST

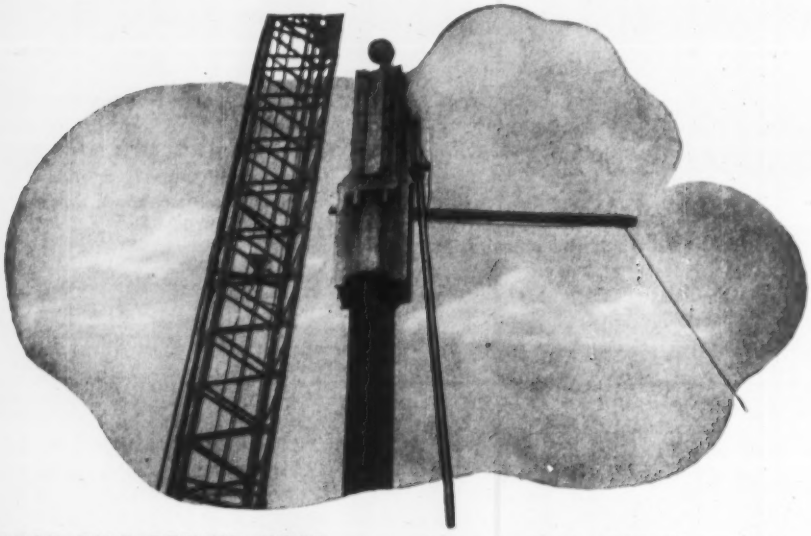
Nuts and bolts instead of rivets throughout. Reinforced, heat-treated alloy steel frame for flexibility as well as great strength. Replaceable bushings to save wear on more expensive major components.

For hauling fill, rock, potash, copper or coal, you can't beat this big Autocar AP-15. Ask your White-Autocar dealer for further information or write direct to us.





AIR HOSE... for heavy-duty, high pressure service—defies rough handling, weather, hard abrasion.



SUPER SERVICE PILE DRIVER HOSE... provides long, trouble-free service. Asbestos insulated rubber tube, cotton and steel reinforced, protected by special rubber cover.

OVER 87 YEARS OF SERVICE TO INDUSTRY

Write today for more information and literature.

HAMILTON RUBBER

MANUFACTURING CORPORATION • Trenton 3, N. J.

A Division of Acme-Hamilton Manufacturing Corporation

ATLANTA • CHICAGO • CLEVELAND • HOUSTON • PITTSBURGH • INDIANAPOLIS • LOS ANGELES • NEW YORK • SAN FRANCISCO

Quarry Is Test Lab for Towers

An abandoned quarry in Derbyshire, England, is now back in service as a laboratory for full-scale testing of tall structures. Its almost vertical 150 ft high, rock walls shield a test structure from real wind loads and at the same time provide anchorage on all sides and at any level for test-load cables that apply simulated wind loads.

The pit has a 60 x 100 ft floor, easily accessible via a cleft that splits one wall of the quarry top to bottom. Structures to be tested are moved in sections through the cleft and assembled on the the pit floor.

Assembly and erection are facilitated by a hoisting gear rigged across the top of the quarry. Anchorage for almost any four-legged tower is provided by two crossed concrete slabs on the quarry floor.

Loads are applied by winches in a control room at the bottom of the pit. Cables run from the winches to shackles anchored in a third concrete slab on the floor, then up to shackles anchored in the pit walls, and from there to load-application points on the tower.

Electric tension meters that have been inserted near the tower end of the load cables are connected to instruments in the control room that indicate cable tension in tons.

Deflections are measured by means of wires that run from the tower to pulleys on the pit walls, thence to the bottom of the quarry. Suspended on the end of each wire is a weight, whose vertical motion indicates the lateral movement of the point of attachment on the tower. The wire also makes one turn around the drum of a potentiometer, which transmits any motion electrically to the control room. There, a gage translates the signal into inches of deflection.

Owned by Stewarts & Lloyds, Ltd., the installation is at present being used to test tubular structures for Tubewrights, Ltd., a Stewarts & Lloyds subsidiary.

Concrete Skyscraper

42 Story Atlas Building nears completition in the Argentine capi' l

Buenos Aires' 42 story Atlas building, tallest and roomiest reinforced concrete building in the Argentine capital and nearly twice as high as any concrete building in the U.S., is now finished

and almost ready for occupancy.

Rising to a height of 410 ft, the structure contains a net rentable area of 290,000 sq ft, including 224 apartments, a number of shops, a theater and a parking garage.

Five years have elapsed since construction began in the project, but the 1955 revolution that resulted in Peron's downfall held up work for more than a year.

The revolution also brought about a change in ownership. Originally a project of the Atlas Corp., whose major stockholders were Peron backers, the building now belongs to the Ministry of Aviation and will be used to house air force personnel.

Straight simple lines characterize the appearance of the building. Continuous mullions carry unbroken vertical lines from top to bottom, thus emphasizing height.

In plan, the structure is T-shaped up to the 24th floor. At that level all three wings, already set back at the 20th floor, are eliminated entirely by further setbacks, and the building continues upward as a square tower. Extending upward 203 ft from the roof is a television transmission tower.

Wall construction is hollow clay tile with imitation stone plaster finish on the weather side. Floors are cellular concrete, finished in some areas with wood, in others with artificial stone. Interior walls are plastered, except in kitchens and baths, which are tiled. Windows are steel and wood, double-hung type.

Total cost of the Atlas building was $5 million. Of this sum, mechanical and electrical installations accounted for 21%. All materials used in the project except certain items of heating equipment and the elevators—five passenger, two service, one freight—were produced in the Argentine.

The building is heated by hot water. A central boiler plant in the basement feeds steam to heat exchangers at eight scattered locations, from which the hot water circulates to tenant spaces.

The structure rests on a reinforced concrete mat 30 ft below grade. Subsoil at this depth is hard loess and tophus, Buenos Aires' typical "red earth" substrata. Farther down is 50 ft of clay-sand layers of varying depths and 80 ft of compact sand. Soil bearing capacities were determined by the penetration tests specified in the New York City code.

Chief architect and construction supervisor of the project is Federico Trimmel. The building was erected by the nationalized firm GEOPE (Compania General de Obras Publicas, Empresa Nacionalizada).

Canada Balks, Alcoa Drops $400 Million Alaska Plan

Alcoa (the Aluminum Company of America) has abandoned all plans for a $400 million hydroelectric development in southeastern Alaska.

The project, for which preliminary plans had been announced by Alcoa several years ago (ENR Aug. 28, 1952, p. 21) would have involved diversion of the headwaters of the Yukon River in Canada. The Canadian government has "refused to consider any diversion of the Yukon headwaters," said Leon E. Hickman, vice-president and general counsel of Alcoa, in a letter to Gov. B. Frank Heintzleman of Alaska.

The project would have generated 1,000,000 kw and included establishment of an aluminum plant.

(*International continued on page 64*)

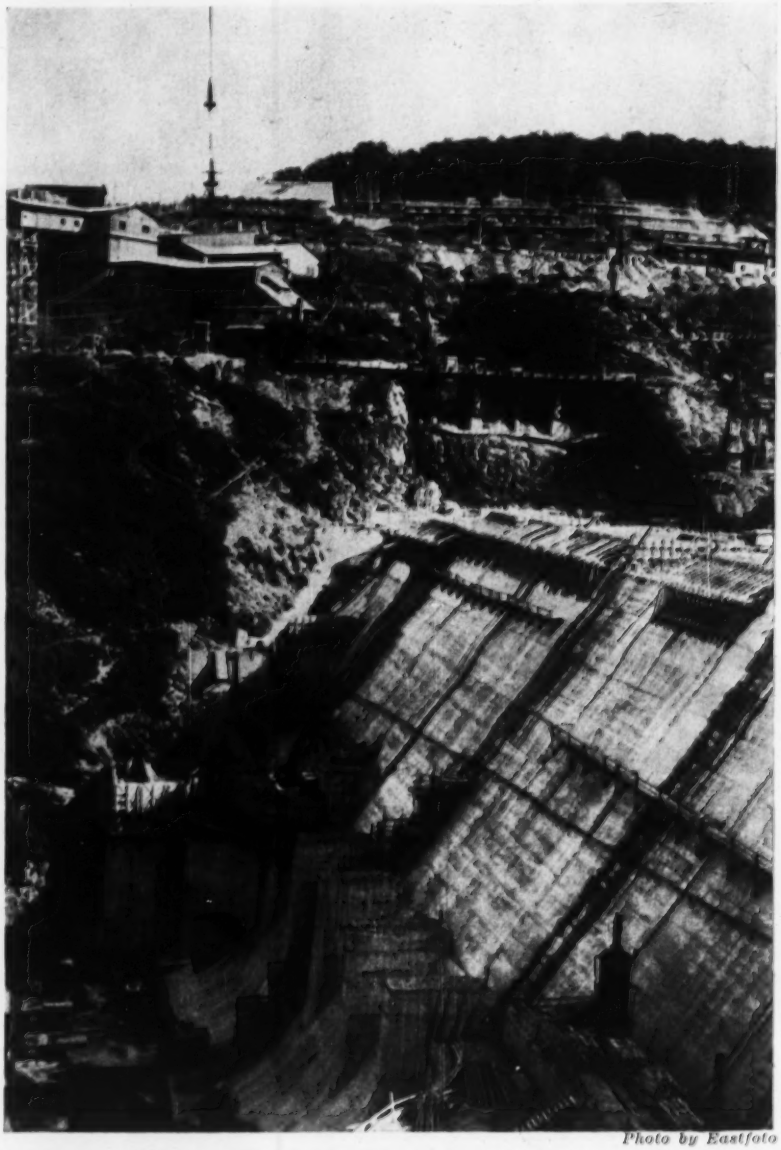


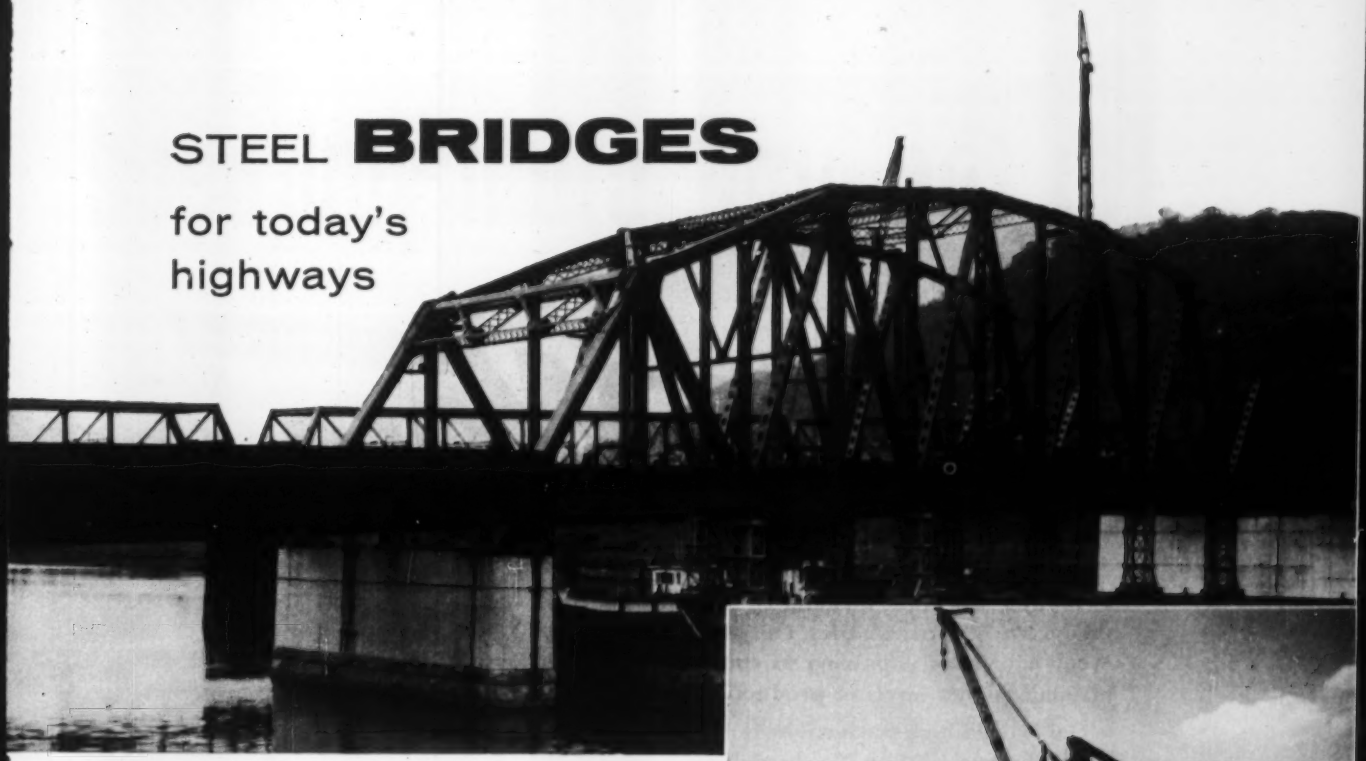
Photo by Eastfoto

German Dam Begins to Take Shape

Rappbode Valley Dam in Germany's Harz Mountains takes shape as cableway moves concrete from plant set up for job. Note cantilever formwork on face of dam. Rappbode will bring water to parts of central Germany and the eastern Harz region.

STEEL **BRIDGES**

for today's
highways



PITTSBURGH
·DES MOINES

Modern highways demand modern bridges wherever roads must "take to the air." For half-a-century, bridge fabrication and erection have been a vital part of our activities, with every advance in design and method reflected in the dependable structures we build. ● The project pictured is the Fleming Park Bridge at Neville Island, Pittsburgh. With an overall length of 804 feet, the bridge has a through-truss channel span of 360 feet, and will accommodate four lanes of traffic, relieving a serious bottleneck in a heavily-travelled area. ● Let us consult on your bridge requirements, and submit a quotation.

PITTSBURGH·DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES, SANTA CLARA, FRESNO, and CADIZ, SPAIN

Sales Offices at:

PITTSBURGH (25)	3414 Neville Island	DES MOINES (8)	915 Tuttle Street
NEWARK (2)	216 Industrial Office Bldg.	DALLAS (1)	1219 Praetorian Building
CHICAGO (3)	1218 First National Bank Bldg.	SEATTLE	522 Lane Street
EL MONTE, CAL	P. O. Box 2068	SANTA CLARA, CAL	621 Alviso Road
MADRID, SPAIN	Diego DeLeon, 60		

PDM STEEL CONSTRUCTION

AISC

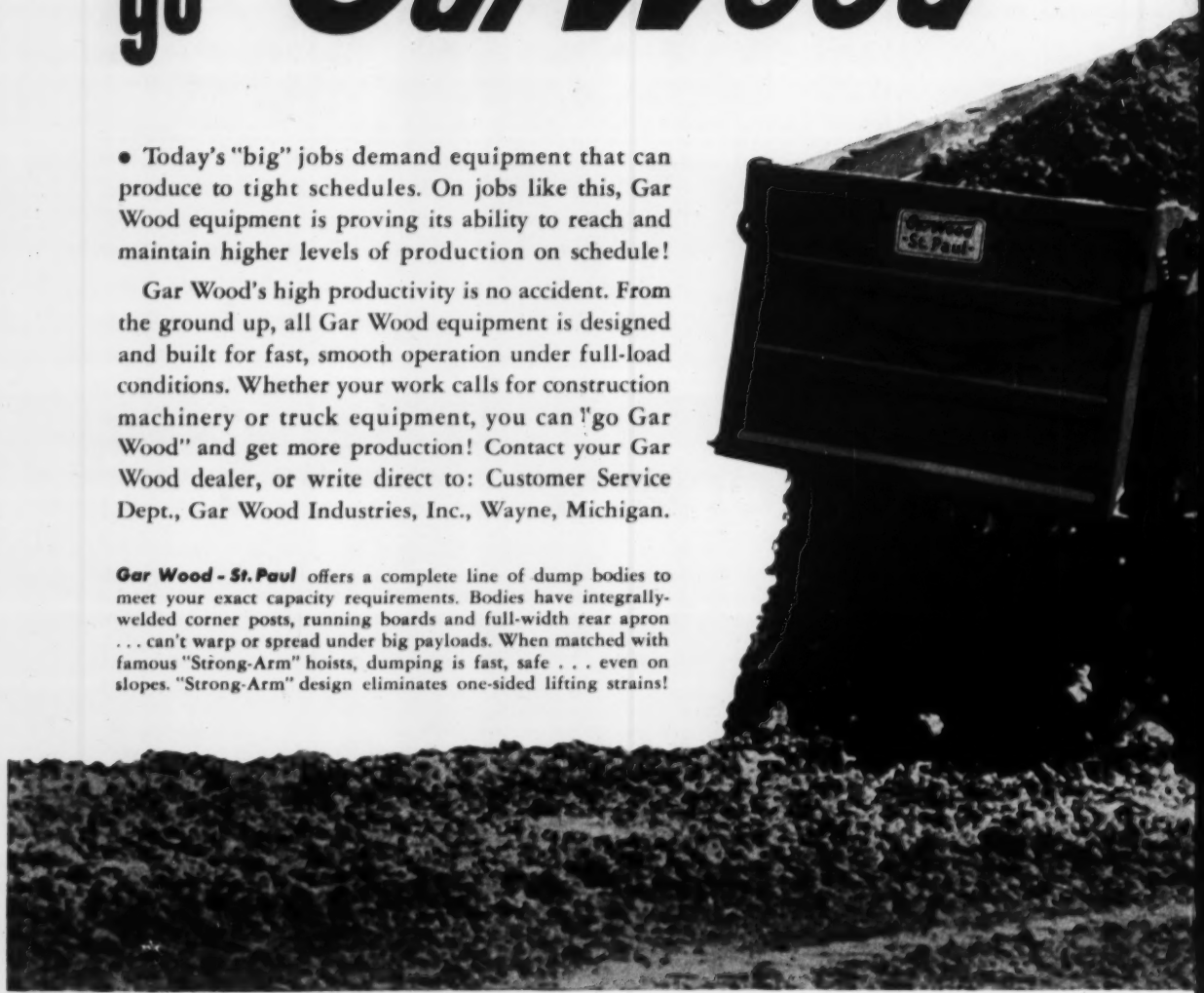
For the production you need

go GarWood

• Today's "big" jobs demand equipment that can produce to tight schedules. On jobs like this, Gar Wood equipment is proving its ability to reach and maintain higher levels of production on schedule!

Gar Wood's high productivity is no accident. From the ground up, all Gar Wood equipment is designed and built for fast, smooth operation under full-load conditions. Whether your work calls for construction machinery or truck equipment, you can "go Gar Wood" and get more production! Contact your Gar Wood dealer, or write direct to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.

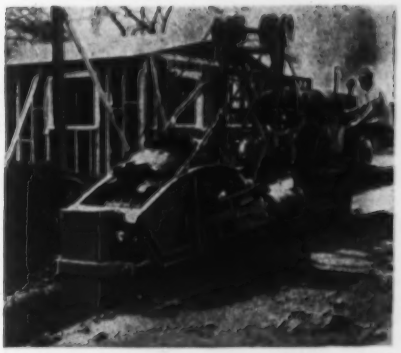
Gar Wood - St. Paul offers a complete line of dump bodies to meet your exact capacity requirements. Bodies have integrally-welded corner posts, running boards and full-width rear apron . . . can't warp or spread under big payloads. When matched with famous "Strong-Arm" hoists, dumping is fast, safe . . . even on slopes. "Strong-Arm" design eliminates one-sided lifting strains!



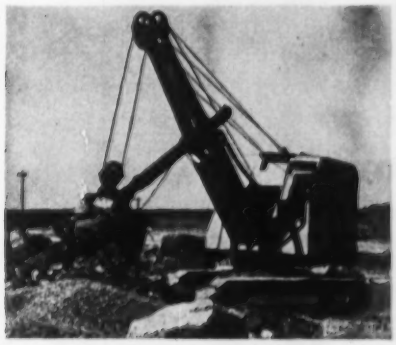
GAR WOOD INDUSTRIES,

PLANTS IN WAYNE AND YPSILANTI, MICH.; FINDLAY, OHIO;

on today's big jobs



Gar Wood-Buckeye ditchers are real production machines. Efficient transmission of power insures maximum power at the digging wheel. And, this power is easier to control in a Buckeye! Hydraulic wheel hoist and hydraulic conveyor drive are instantly operated from seat by simple, one-hand controls. No complicated shifting, no need to stop digging wheel or crawlers.



Gar Wood ¾-yard excavators pay off in many "high-output" features. Positive, independent chain crowd on the 75B puts full engine power into every bite. Independent travel means operator can hoist or swing while moving. Dependable production is insured by heavy-duty conical-hook double rollers and flame-hardened gears and shafts.

Gar Wood-Buckeye Hi-Way Wideners dig clean, flat-bottomed ditch. Excellent uniformity of width and depth of cut eliminates later finegrading. Fast, accurate control makes it easy to hold desired grade. Conveyor discharges spoil to either side, clear of widened ditch. Owners report digging up to a mile of clean side ditch per day!

INC. Wayne, Michigan

MATTOON, Ill.; RICHMOND, CALIF.

RUBBING CEILINGS?

Do it

G *with a*

I

R

A

F

F

E

CEILING

GRINDER

- **FASTER AND EASIER:** One man will average almost 4000 sq. ft. per day. Does not need scaffolding.
- **CHEAPER AND BETTER:** Money saved on finishing will help pay for grinding.
- **DEPENDABLE:** Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

GIRAFFE®

- Heights up to 24 ft.

Has been adapted to cleaning ceilings.

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

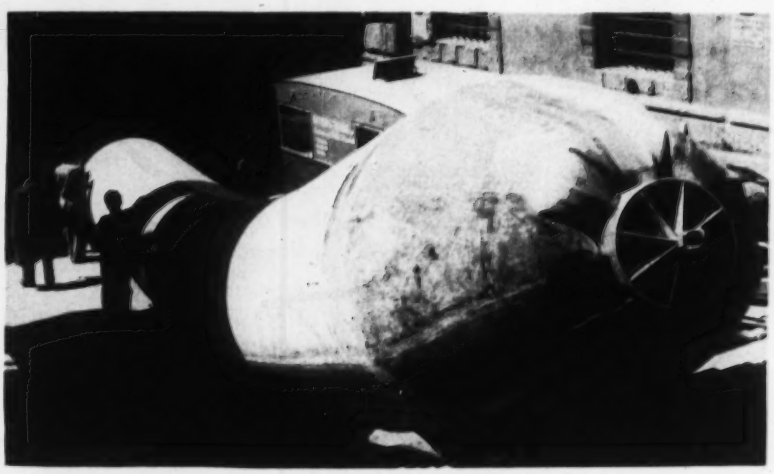
450 Ft Concrete Building Is Planned for Melbourne

Melbourne, Australia, soon will have a 45 story office building if plans of a group of Chinese millionaires materialize. The group, from Hong Kong and Sumatra, plan to spend $10 million on the project.

As planned by Kenneth MacDonald & Associates, Melbourne architects, the building will be a 450 ft high reinforced concrete tower, octagonal in plan at the base. Alternate walls of the 8 sided structure will be its main exterior supports. Each of these four faces will be both an exterior wall and one side of a triangular concrete column whose other two sides will be interior walls.

The sides of the building, all plane surfaces, will have a slight inward batter. Two opposite sides will narrow down to a point at the top of the building, thus giving the plan at that level a hexagonal shape.

The building will contain about 306,000 sq ft of office space and the fringe



Giant Rubber Tube Is Inflated . . .

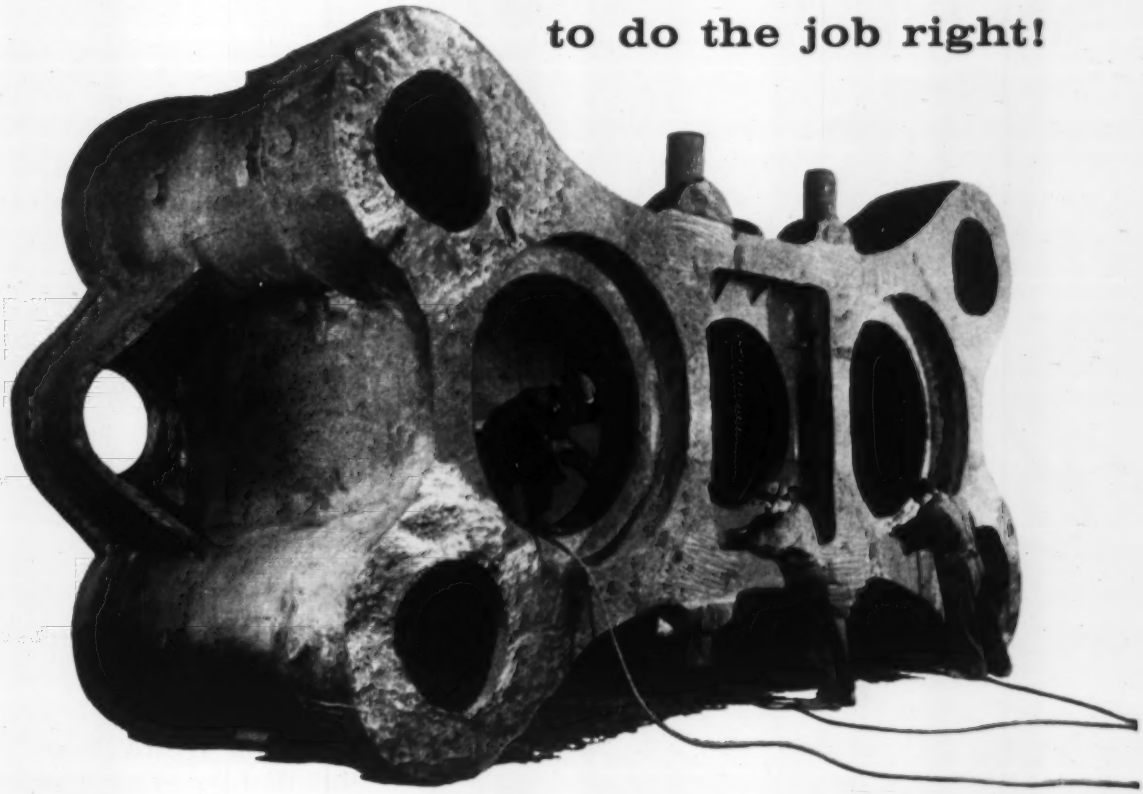
. . . To Become Liner Form for Tunnel

The Italians call them "cucumbers," but they are simply rubber tubes that are inflated to become the liner form for concrete tunnels that house utilities lines. When the concrete liner hardens sufficiently, the tubes are deflated and removed.

Several of Italy's larger cities are employing the flexible forms, which are produced in various lengths and diameters. The resulting lined tunnel provides protection for ducts carrying electric cable, water and gas pipe.

SIZE and STRENGTH

to do the job right!



That's what you get when you place insurance protection on your overseas properties in the hands of the American Foreign Insurance Association.

More than two thousand carefully trained employees in offices located in 69 foreign countries stand ready to serve you. Twenty-two of America's outstanding capital stock insurance companies, members of AFIA, stand behind the protection you buy.

To be sure your protection is right, ask your agent or broker to bring your foreign insurance problems to AFIA.

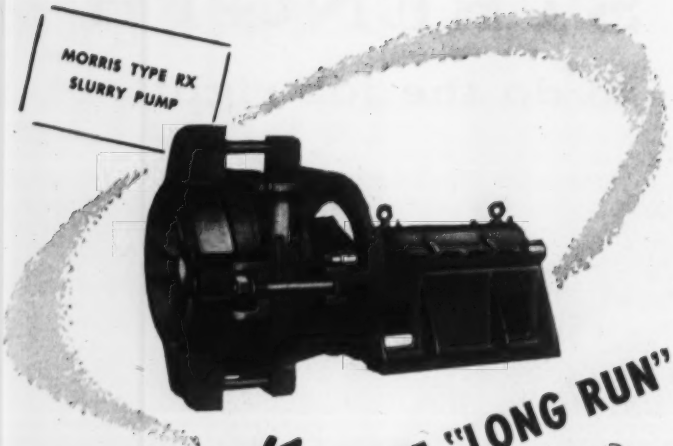
AFIA

AMERICAN FOREIGN INSURANCE ASSOCIATION

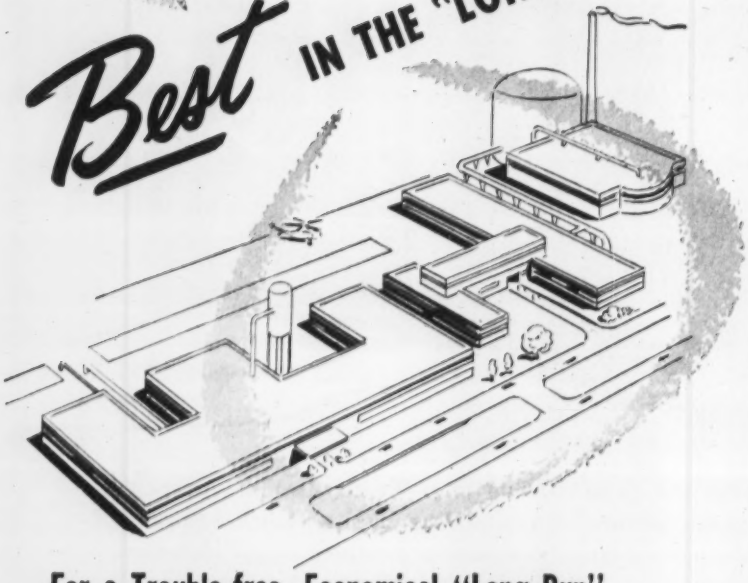
161 William Street • New York 38, New York

CHICAGO OFFICE..Insurance Exchange Building, 175 West Jackson Blvd., Chicago 4, Illinois
DALLAS OFFICE.....400 Vaughn Building, 1712 Commerce Street, Dallas 1, Texas
LOS ANGELES OFFICE .....3277 Wilshire Boulevard, Los Angeles 5, California
SAN FRANCISCO OFFICE..Russ Building, 235 Montgomery Street, San Francisco 4, California
WASHINGTON OFFICE....Woodward Building, 733 15th Street, N.W., Washington 5, D.C.

An association of 22 American capital stock fire, marine, casualty and surety insurance companies providing insurance protection in foreign lands



Best IN THE "LONG RUN"...



For a Trouble-free, Economical "Long Run"

SPECIFY MORRIS PUMPS...

● The Morris Pump operating right now will continue to function efficiently for many years to come. Long periods of testing have proved that.

Every pump built by Morris Machine Works is extremely rugged, dependable, trouble-free; operates with minimum attention . . . cuts maintenance costs . . . can be quickly dismantled for inspection, avoiding lengthy and expensive lay-up time.

Exacting engineering and design at Morris results in pumps that are *really* better in the long run; that give peak performance for both present and future needs.

● **FREE SERVICE** Morris engineers will gladly recommend the pump best suited to your size, capacity and specifications. Send necessary data today.

MORRIS CENTRIFUGAL PUMPS

Sales Offices in Principal Cities

MORRIS MACHINE WORKS · BALDWINSVILLE, N. Y.

development at its base will provide about 100,000 sq ft of shop space. Plans for the project include three-level parking for 2,000 cars and a heliport with accommodations for 12 helicopters.

Rhodesia Railways Getting $12 Million Control System

Rhodesia railways in Central Africa are installing what is believed to be the world's longest centralized traffic control system, costing more than $12 million.

This traffic control installation will mean a big step up in the capacity of the 1,246 mile single track railroad from Umtali in Southern Rhodesia through Salisbury and Bulwayo to Ndola in northern Rhodesia.

When the system is completed the average time needed for trains to pass each other will be reduced from 13 minutes to 3½.

Three British companies—Siemans Limited, the General Railway Signalling Co., Ltd., and the British Section of the Westinghouse Company—are making the installation of equipment. The project may take three years to complete.

Valves for Hydro Plant May Be Largest of Type

Five 11 ft spherical valves, each to control a flow of water equivalent to 200,000 hp, will be designed and manufactured by Dominion Engineering Works, Ltd., Montreal.

The valves, believed to be the largest of their type ever made, are for the Chutes-des-Passes powerplant of Aluminum Co. of Canada. The project is a 1 million hp installation under construction on the Peribonca River in northeastern Quebec.

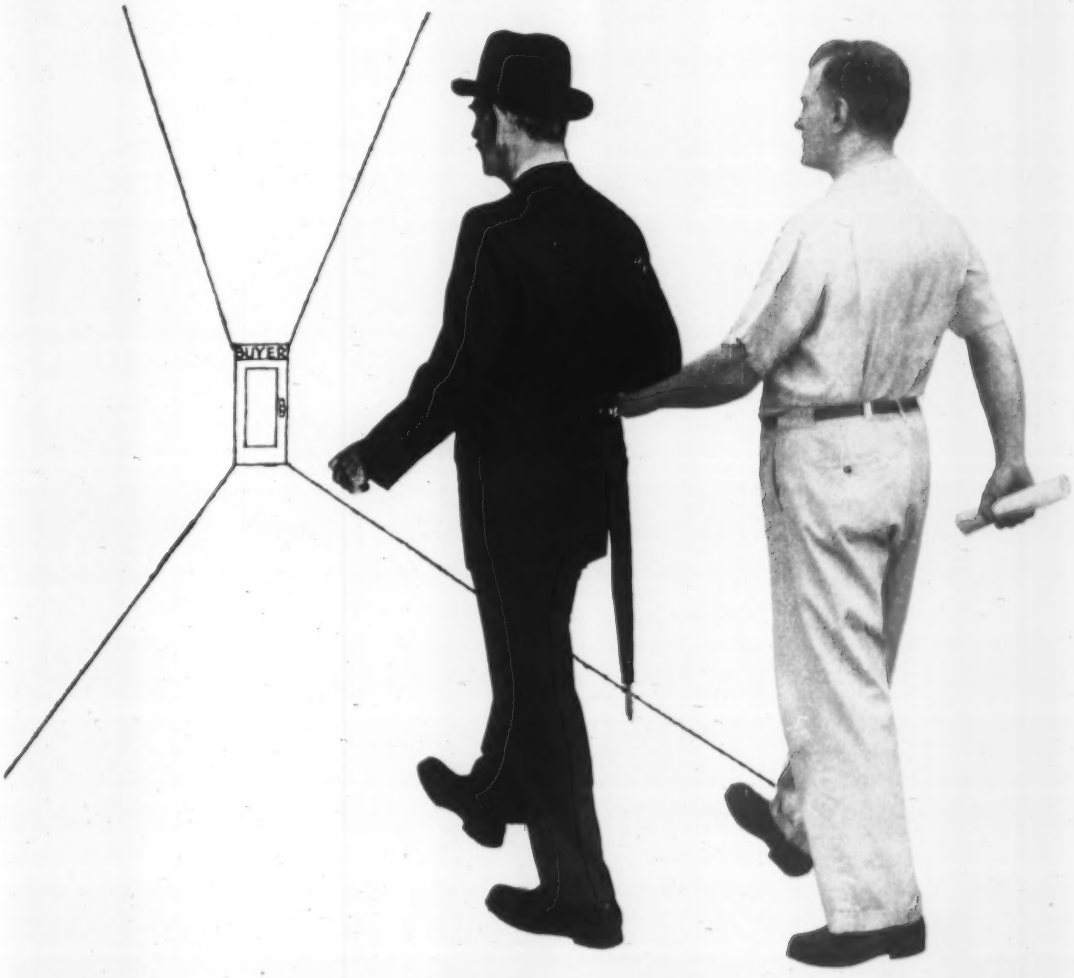
Each valve will weigh over 500,000 lb and the assembled valve will occupy more space than a 2 story house.

Dominion Engineering will manufacture the five valves at its plant in Lachine, Que.

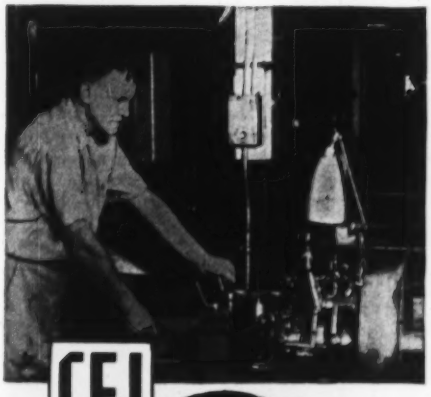
African Road Congress To Be Held in Rhodesia

An African Road Congress, organized by the Road Federation of East, Central and South Africa with the cooperation of the International Road Federation, is to meet in Salisbury, Southern Rhodesia, May 27-30.

The main purpose of the congress is to consider ways and means of bringing the Nairobi-Cape Town route, with its links to Beira, Blantyre and Elizabethville, to a standard adequate for the improvement of trade.



Your Wickwire Rope Distributor and our closer operator ...ready to help you



This closer operator—running a machine which forms our rope—is with your Wickwire Rope Distributor every time he makes a call.

True, he's physically in the mill, where he's carefully conducting this final fabricating operation. But, whenever your Wickwire Distributor makes a call, he has the full assurance that every foot of Wickwire Rope has been carefully assembled by skilled craftsmen . . . and that it will give you long, trouble-free service on your job.

It's just one more reason why your Wickwire Distributor knows he's got top-quality wire rope, slings and strand to sell . . . and that these products will serve you well.

CF&I WICKWIRE ROPE A CF&I PRODUCT

4085

A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

New specialized off-highway V-8

Another reason why contractors find International Trucks cost least to own!

A new six-wheeler designed exclusively by INTERNATIONAL for heavy-duty off-highway work—with the most powerful truck-type engine in any comparable truck. Tough, husky construction to perform profitably under the most rugged conditions!

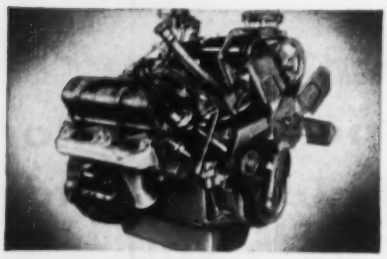
Here is more evidence of the INTERNATIONAL policy to build the trucks that operators want and need . . . trucks with only the highest quality components, the biggest selection of components to stay on the job longer at *least* cost. And INTERNATIONAL Trucks do cost *least* to own—fleet owners' cost records prove* this.

Why not get more proof yourself? See or call your INTERNATIONAL Dealer for all the facts. Do it today.

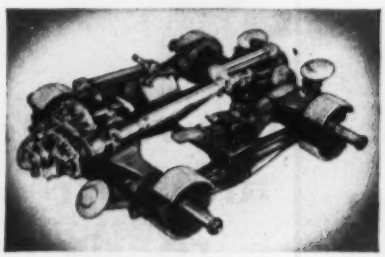
**Signed statements in our files, from fleet operators throughout the U. S., back up this statement.*

INTERNATIONAL HARVESTER COMPANY, CHICAGO

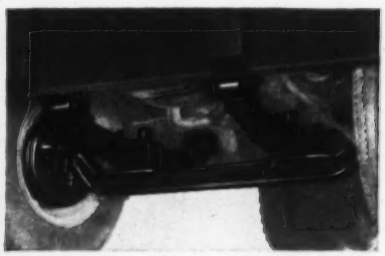
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors



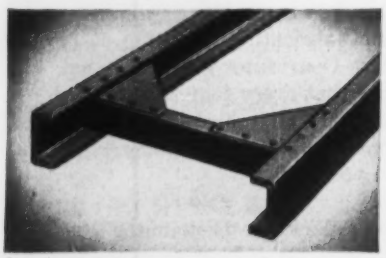
1 Most V-8 power in any truck, 257 hp. New VF-230 model has load-moving ability unlimited, power to haul the biggest loads anywhere. Other six-wheeler power plants include sixes and new V-8's—gasoline, LPG and diesel engines up to 356 hp.



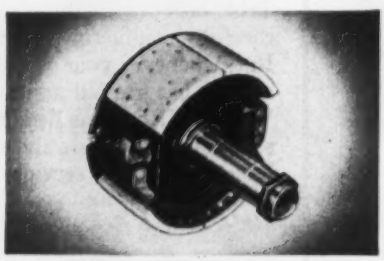
2 INTERNATIONAL tandems give longer, more dependable life. This heavy-duty, double reduction unit has 46,000 lbs. capacity. Sturdy cast steel housings. Third differential with lock transmits power smoothly, evenly to each axle.



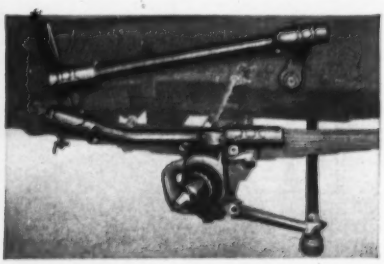
3 Balanced heavy-duty front end for maximum loading, added stability and longer life. 15,000 lbs. capacity heat-treated high carbon steel axles, 4-inch wide springs with threaded pins and bushings. Available on several other models.



4 Steel-Flex frames combine great strength with proper flexibility. New models have straight-through, double channels made of heat-treated alloy steel. Reinforced crossmembers with husky gussets for sturdy, lasting tandem suspension.

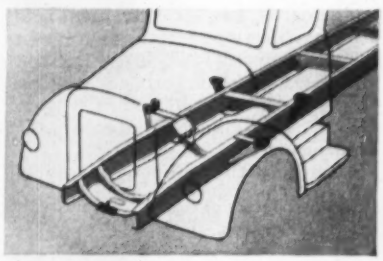


5 Efficient, fast-acting air brakes are standard on new VF-230 model—17½ in. x 3 in. front, 16½ in. x 7 in. rear with 1,162 sq. in. total lining area. Other six-wheel models with brake types and sizes to match the load and operation *exactly*.



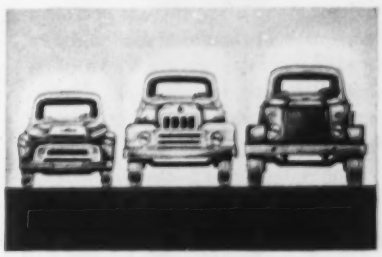
6 True geometric steering provides easier handling and outstanding maneuverability. Heavy-duty gears are cam and roller-mounted twin lever type. Controls mounted *ahead* of the front axle. Power steering standard on VF-230 model.

Latest addition to the world's most popular line of six-wheel trucks—new INTERNATIONAL Model VF-230 with 60,000 lbs. GVW. Built to absorb severe shock loads, to stand up under the most extreme applications. Engine is the industry's most powerful V-8, 257 *hp.* Other new off-highway V-8 six-wheelers available, plus models from 22,000 to 76,800 lbs. GVW in conventional and COE design. Complete selection of all-wheel-drive models, too.



7 For cab comfort and long life. Quiet, level ride without transmitting stress to cab, fenders, hood or radiator. It's the result of wide spaced, rear shackle type mountings in an exclusive INTERNATIONAL 5-point, rubber-insulated cab suspension.

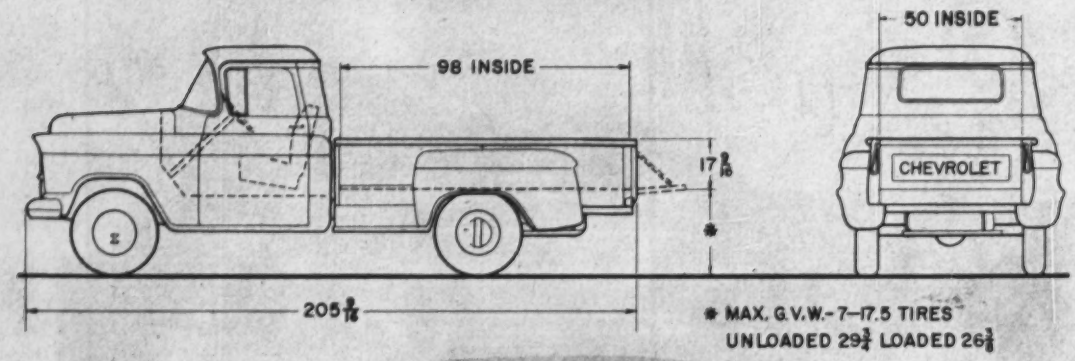
8 All-wheel drive models have the extra traction and pull needed for all tough, off-highway operations. Completely factory-built, 7,000 to 43,000 lbs. GVW. Low height with ample ground clearance. Complete selection of equipment available.



9 World's most complete line. There is an INTERNATIONAL "tailor-made" for every truck job, ½ tonners to 96,000 pounders. Choice of 4-wheel, 6-wheel and all-wheel-drive models, conventional and COE design. Every one built to cost *least* to own!

Pick a practical pickup!

Check the size of a 1957 Chevy Pickup body for evidence of practical design. The box of the new long-wheelbase ½-ton Pickup is a full 98" long—currently the longest ½-ton Pickup body size you can get!



This big built-for-work "box" makes CHEVY first choice in Pickups!

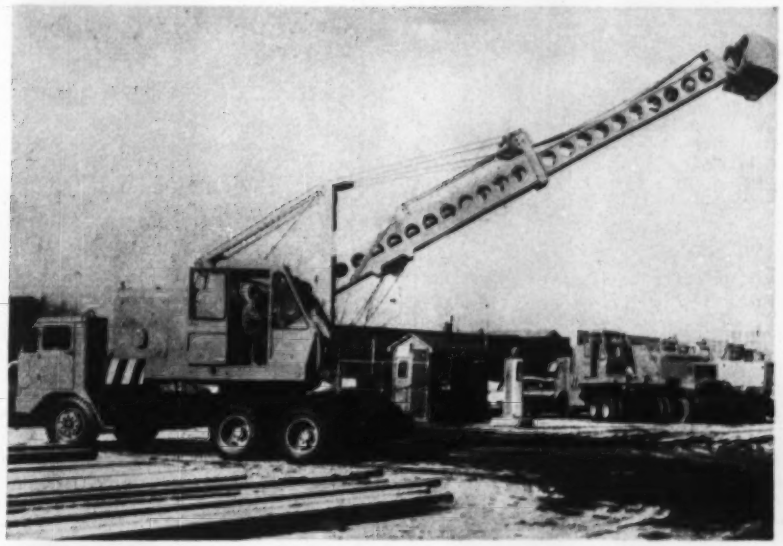
These best selling '57 Chevrolet Pickups are practical trucks in every respect. They offer modern power to keep your costs down low, modern looks to keep your prestige up high... and all these modern body advantages to help you make light work of tough jobs!

They're the most practical and profitable Pickups going! For example, they enable you to load more easily and quickly, thanks to *low* loading height and steel skid strips in the long-lasting hardwood floor. And for your bulkiest loads, stake pockets accommodate the addition of racks or side boards. Other modern advantages include extra hauling space provided by *outboard wheel housings* . . . a grain-tight tailgate with anti-rattle latch that strengthens the sides . . . and practical level-ledge side panels. Chevy gives you running boards, too, for convenient side loading. These new Pickups come in a wide range of ½-, ¾- and 1-ton models with spacious boxes ranging up to more than 9 feet in length. See your Chevrolet dealer for the one that suits your job. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

'57 CHEVROLET TASK·FORCE TRUCKS

PROVED ON THE ALCAN HIGHWAY . . . CHAMPS OF EVERY WEIGHT CLASS

CHEVROLET



THE "CHORE-MASTER," a removable hydraulic attachment for Model 125A "Quick-Way," that reaches, digs, backfills, loads and grades at any angle.

Telescoping Boom Is New Crane Attachment

The "Chore-Master", a hydraulic reaching, grading, digging attachment for crane-shovels, has been introduced by "Quick-Way" Truck Shovel Co.

The new product is a telescoping boom that mounts on a special gantry and is interchangeable with other standard attachments on "Quick-Way" cranes. One hydraulic cylinder powers the telescoping action; a second ram opens and closes the bucket. A separate motor rotates the bucket 50 deg. in either direction at the end of the boom, to impart a wrist action.

The hydraulic system includes a tank and a tandem pump that operates off the crane engine. Hydraulic hoses extend to the front of the machine, where they attach to the hydraulic lines on the boom by couplings.

The boom is raised by cable from the main hoist drum and down pressure is applied by cable from the haul-back drum. A boom hoist cable raises the gantry, which collapses for easy mounting and traveling.

All hydraulic actions are controlled by a single lever in the cab.

The telescoping boom extends to a radius of 33 ft with the bucket open or retracts to a radius of 21 ft. It can be raised to an angle of 45 deg, enabling it to grade slopes 27 ft high. A digging depth of 13 ft is also possible. "Quick-Way" Truck Shovel Co., P. O. Box 1800, Denver 1, Colo.

Fork-Lift Has Bucket and Flatbed Attachments

A gasoline-powered fork lift truck has been developed for use on building-construction sites.

It has a removable fork unit that can be replaced with a 10 cu ft dump bucket or with either of two sizes of flatbeds that have been designed for the handling of concrete, mortar, forms, equipment or lumber.

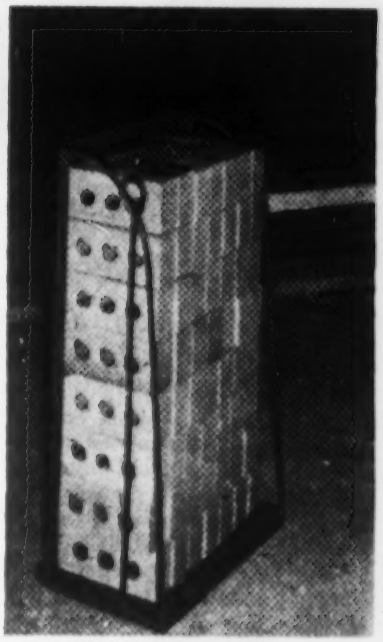
According to the manufacturer, the fork lift will load from trucks or stockpiles in 6½ seconds, will lift 1,000 lb to a height of 6½ ft and carry the load over rough ground and up 20% grades. The Prime Mover Co., Muscatine, Iowa.

Hydraulic Tool Makes Masonry Cutting Easier

A two-piece masonry cutter is equipped with a 17½ ton hydraulic ram to shear masonry up to 8½ in. by 10 in. in size.

A 10,000 psi pump activates the ram. Cutting edges consist of two 1 in. reversible steel blades. The cutter is said to cut on a straight line without crumbling or tearing the masonry.

The unit is compact and portable. It weighs 110 lb. Tru-Split Tool Co., 114 W. 7th St., Winona, Minn.



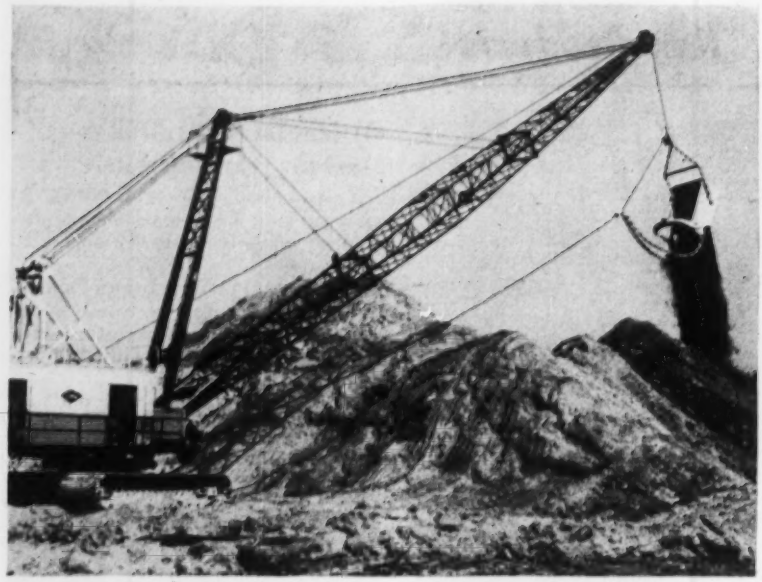
Masonry Pallet Will Ease Brick Handling on the Job

The "Mason's Pal" (shown above) is a steel frame pallet designed to save time and labor costs in the movement of masonry materials from storage areas to masons. The pallet is 18 in. high, 48 in. wide and 13 in. deep. It can carry up to 56 standard brick or 27 standard or glazed tile.

The pallet is first loaded, then scooped onto a standard hand truck and wheeled to the lifting device. Two eyes on the pallet allow it to be lifted by winch if an elevator is not available.

The pallet, it is claimed, prevents damage or waste of the masonry units and reduces cost of brick in place by 10%. Adams Associates, P .O. Box 455, Evansville, Ind.

(*New Products continued on page 74*)

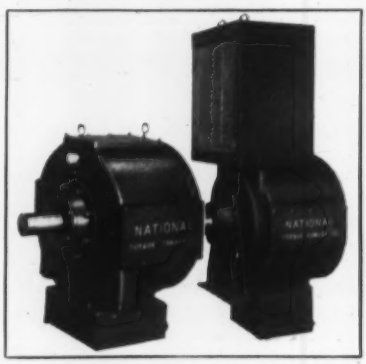


Shovels without torque converters will be obsolete within a few years, in the opinion of W. M. Phillips, V.P. of G. C. Phillips Tractor Co., Inc., Birmingham. The firm sells Lima 2400 Shovels, which incorporate National Torque Converters. Above, the Lima 2400 is shown in use as a dragline.

"...The National Torque Converter affords maximum efficiency on power transmission..." from engine to load

That is what W. M. Phillips, Vice President, G. C. Phillips Tractor Co., Inc., Birmingham, said about the National Torque Converter equipped Lima 2400 Shovel. The Phillips' firm represents 20 major manufacturers of road building and contractor's equipment. The National Torque Converter "is the best-engineered converter in the field," Mr. Phillips continued, "with less slippage and faster pick-up than the others we have seen."

This speaks well of the simplicity of design and ruggedness of construction of the National Torque Converter.



National Torque Converters are manufactured with or without integral cooling systems.

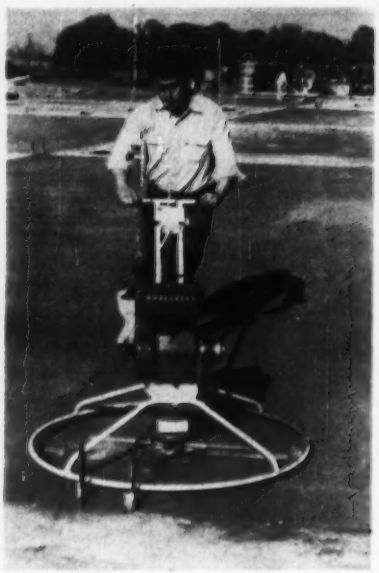
We invite you to discuss with our engineers the application of National Torque Converters on your excavator equipment. Our six basic hydraulic circuit sizes, each with a range of input ratings, permit exact matching of National Torque Converter to the prime mover on your power shovel or other equipment of 100 to 1000 horsepower.

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission



New Concrete Finisher Combines Float-Trowel

Now in production is a combination concrete floating and trowelling machine—a four-bladed mechanism that the manufacturer claims completes both operations without the necessity of changing blades.

Features include a hydraulically-controlled blade adjustment to change pitch of the blades and an automatic mercury shut-off switch.

This new concrete finishing machine is offered in two sizes—36 and 48 in. dia. Challenge Manufacturing Co., 5334 San Fernando Road, Los Angeles 65, Calif.

Cement Additive Gives Strength to Concrete

A new cement additive is reported to increase the strength of concrete by reducing the amount of water that is required for the mix to reach a given consistency.

The additive, which is marketed under the name, "Placewel," is a liquid, water-reducing, air-entraining agent and is composed of amine salts of complex alkyl and aryl hydrocarbons.

The lower water-cement ratio possible with the additive reduces costs in gaining a given-strength concrete, according to the manufacturer. The additive can be used in all types of general concrete construction including airports and dams. Celite Division, Johns-Manville Corp., 22 E. 40th St., New York 16, N. Y.

(*New Products continued on page 76*)

With high-apron lift, and positive ejection tailgate, electric control B Tournapull with Fullpak Scraper spreads heaping load fast in controlled layers.

BIG B FULLPAK*

delivers more pay-yards... at lowest-net-cost-per-yard

The new LeTourneau-Westinghouse 27-yd. B Tournapull® with Fullpak Scraper has the *capacity*, *speed*, *power*, and *stamina* to deliver more pay-yards at lowest-net-cost-per-yard—lower than any of today's big production scraper units. The big "B" incorporates the same high-production design test-proven by its popular companion, the 18-yd. C Tournapull. Check these important B Tournapull advantages:

√ **Loads faster** — Dirt flow into new B Fullpak bowl is nearly horizontal, since bowl bottom has only 1° rise. Giant scraper packs full capacity, low-void payloads fast. With shallower, broader bowl, less force is required for *lifting* material to heap bowl — as with boxy high-sheeted scrapers. That means more power can be applied to *cutting* and *pulling*. Also, low push-block speeds load by giving direct-line thrust from pusher to blade.

√ **Boils better** — B Fullpak tailgate has curved top, to roll material forward into the heap — filling all corners and around apron. Crowned side-sheets reduce spillage, help deflect material into all corners.

√ **High apron lift** — 7'1" apron lift speeds loading and unloading of chunky material. Smooth streamlined side-arms and side-sheets prevent chunks from being trapped.

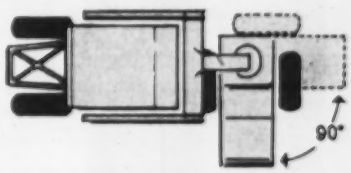
√ **10 speeds** — Choice of 10 speeds forward (from 2.6 to 28.4 mph) ... plus clutch brake for fast shifting ... means hauling at higher speeds, more trips per hour. Low-gear matches pusher speed, enables 293 hp "B" to help itself in loading, gives maximum power for pulling through soft footing.

√ **Faster, easier servicing** — All working parts of B Fullpak are easy to get at and service in the field. Fewer fittings and check points reduce lubrication time. Big 27.00x33 low-pressure tires have ample load-carrying capacity, are interchangeable all around.

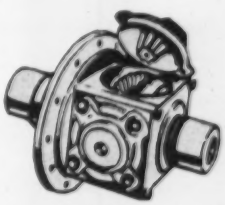
For complete details

These and other exclusive LeTourneau-Westinghouse features give you high-efficiency on your production earth-moving for big construction jobs. No other big-capacity scraper can match Fullpak's combination of advantages. Call or write for complete details.

Other profit-producing features on the new B Tournapull



90° turns ... with electric power-steer, through geared king-pin, permits Big "B" to make non-stop U-turns in area less than its own length ... less than the turning diameter of a pick-up truck.



Power-transfer differential ... automatically transfers power from slipping wheel to wheel with best footing. With Tournapull you travel safely through soft, spongy spots with smooth, even application of power to tractive conditions.

Exclusive Fullpak Scraper design ... gives faster loading, better boiling. Diagram shows how lower push-block carries pusher thrust direct to blade for fast cut.

*Trademark BP-1404-G-b

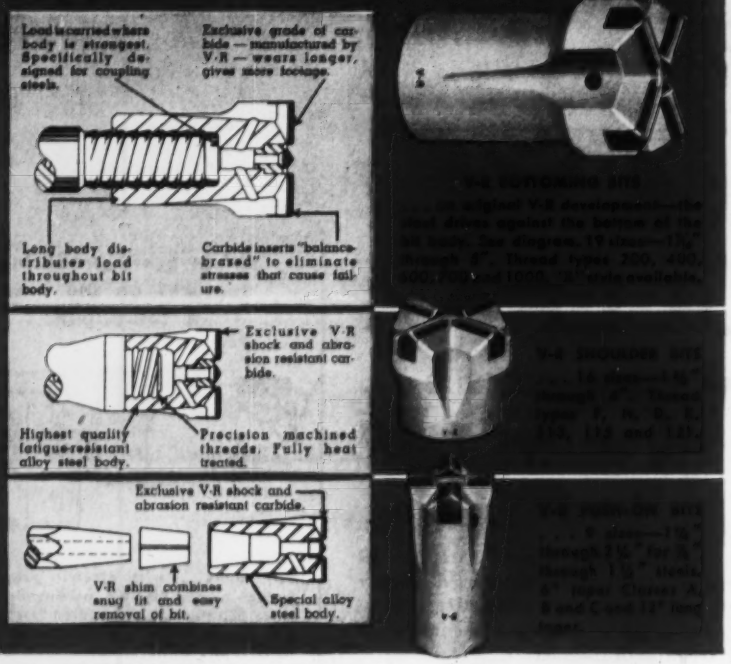
LeTourneau-**WESTINGHOUSE** Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

V-R Bits...

drill more on any job!


Load is carried where body is strongest. Specifically designed for coupling steels.
Exclusive grade of carbide — manufactured by V-R — wears longer, gives more footage.
Long body distributes load throughout bit body.
Carbide inserts "balance-brazed" to eliminate stresses that cause failure.
Exclusive V-R shock and abrasion resistant carbide.
Highest quality fatigue-resistant alloy steel body.
Precision machined threads. Fully heat treated.
Exclusive V-R shock and abrasion resistant carbide.
V-R shim combines snug fit and easy removal of bit.
Special alloy steel body.

Wherever there is rock, V-R Bits are building a reputation for fast, low cost drilling. There are good reasons:

Exclusive Carbide Grades. Since 1930, Vascoloy-Ramet Corporation has been a recognized leader in the manufacture of cemented carbides for severe wear applications. The carbide in V-R Bits is a recent, exclusive development providing exceptional impact and abrasion resistance.

Precision-Set Blanks. V-R carbide inserts are perfectly positioned in the bit body, preventing irregular stresses that shorten bit life.

Heavy-Duty Precision-Ground Bodies. Exclusive design, special non-fatiguing alloy steel, controlled heat treating, accurate threads and precision grinding produce V-R quality products.

Use the bits that are beating them all—V-R Bits!

ASK FOR CATALOG
—call your V-R representative or distributor, or write:

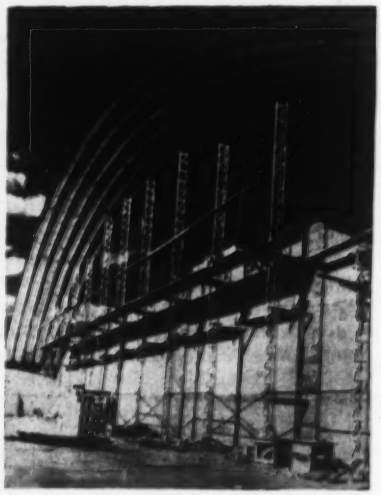
M-612

V-R Vascoloy-Ramet Corporation
SUBSIDIARY OF FANSTEEL METALLURGICAL CORPORATION
868 Market Street • Waukegan, Ill.

Midget Vibrator Reaches Deep into Narrow Forms

A lightweight concrete vibrator with a head only 1¼ in. in diameter is designed for use in hard-to-reach spots in narrow forms. The small head has ball bearings at each end supporting the eccentric weight.

The vibrator is driven by a ½ hp motor at 12,000 vpm and has a trigger switch mounted in the handle. The vibrator has a 4 ft flexible shaft with the wire core encased in strong rubber. The flexible shaft allows the head to reach any spot in the form where vibrating is indicated. Stow Mfg. Co., 443 State St., Binghamton, N. Y.



Tower Insert Adds Height To Adjustable Scaffolding

A 9 ft tower-extension has been added to the Morgen line of scaffolding—a series of towers with adjustable cable-suspended platforms. The ex-

Working closely behind mobile surface-heater, Adams 550 peels 1½" of cracked and lifeless asphalt off concrete base in Los Angeles, California street. With speed limited by heater's progress, 2 city-owned Adams graders work in low-creeper . . . apply steady power at average rate of 22′ per minute forward. Each crew — consisting of heater, grader, front-end loader, and trucks — prepares 10,000 to 11,000 sq. ft. of pavement for resurfacing per 8-hour day.

Extra output with flexibility of creeper gears

On almost every grading job, certain operations can be performed best by using your grader's full push-power at very-slow forward speed. That's why LeTourneau-Westinghouse offers creeper gears for its 5 direct-drive Adams graders.

With creeper gears, your Adams can apply *all* its horsepower to heavy-duty or precision grading at extra-slow speeds . . . ranging as slow as 30′ to 36′ of full-power forward travel per minute. These gears fit standard Adams transmission . . . may be purchased with your grader, or installed later, in the field.

Added "muscle" when you need it

Creeper gears let you concentrate grader's full drawbar power at slow speeds. With steady application of power to slow-turning tandem wheels, tires grip better . . . wheels have less tendency to "spin". You get more push-power for starting extra-heavy loads . . . for taking a big first cut . . . for ripping up old roadways, hardpan, clay . . . for pulling stumps and loosening boulders.

Gives you full control of power

With creeper gears, you can apply full-throttle power to ordinary grading in areas of hidden rocks, roots, or old pavement. You work at speeds that give you easy control of forward motion without slipping the clutch . . . allow for instant stops when non-yielding objects are encountered. And when you work around obstructions, creepers allow your Adams to take a full cut at rated engine power . . . thus eliminate the need for backing up to make several shallower cuts at throttled-down speed.

How creepers help on fine-grading

This combination of high power and slow travel makes Adams' creeper speeds ideal for finish-grading. You have plenty of power to take a hefty cut . . . at speeds that allow you to make precise, minor adjustments or change contour while in motion. One cut often serves where ordinary graders would need to make two or three. This ability to grade and maneuver at extra low speeds also comes in handy for careful work between forms and in close quarters.

Save money

In the long run, creeper gears pay for themselves. When you have creepers, you don't have to "slip the clutch" at high engine RPM to get steady power at slow speed. You don't risk the shocks of impact to "pick-up" a heavy load. Clutches last longer . . . shock damage to blade and linkage is minimized . . . you save expensive repairs and avoid unnecessary downtime.

Ask for demonstration

See how creeper gears, plus the wider working-range of Adams' standard transmissions, give you more just-right, power-speed combinations. Let us show you how they help you complete more work, faster, at lower cost. 5 models with conventional transmission, 60 to 150 hp.

For even more push-power, ask about new 190 hp POWER-*Flow* Adams 660 *with torque-converter*. This super heavy-duty grader gives you the effective work-power of an infinite number of power-speed combinations, from 0.0 mph to 27.4 mph . . . automatically balances power to load . . . keeps speed constant though load varies. Call or write for complete details without obligation.

Adams, POWER-Flow—Trademark AG-1265-G-b-5

POWER . . . PRECISION . . . PROTECTION . . .
Creepers pay off on jobs like these:

Slope root-filled banks

Optional creeper gears on most models give you 3 extra-slow speeds . . . consist of 5 gears and 2 shafts added to standard transmission. Operator shifts into creeper gears with normal shift levers. Added cost, when ordered with grader, is only 1.6% to 2.9% of grader price, depending on model.

- Grade rocky roadbeds
- Dig hard shale
- Finish-cut next to buildings
- Pull stumps
- Scarify heavy blacktop
- Loosen boulders
- Work around old foundations
- Ditch along fence and power lines
- Fine-grade between forms

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

BUILD

AT LESS COST

You can save as much as $2 per square foot with Steelcraft standard steel buildings. Skillful pre-engineering cuts both labor and material costs, saving thousands of dollars over other construction methods.

FASTER

You can get fast delivery and complete erection service from your local Steelcraft steel building dealer. And, he can erect your building in only *weeks* instead of months because all parts are readily available from one source . . . all parts are predesigned for fast field assembly. Swift completion can put you in business faster . . . let you expand faster . . . meet space emergencies faster.

BETTER

Steelcraft buildings are *permanent* and provisions are "built in" for economical future expansion. You can buy to suit your exact needs . . . any width, height or length, with spans up to 80 feet . . . choice of wall and roof materials, doors, windows, skylights, insulation.

with

STEELCRAFT

Standard Steel Buildings

SEND FOR NEW 20-PAGE CATALOG

describing building types, construction details, and applications

THE STEELCRAFT MANUFACTURING COMPANY

9017 BLUE ASH RD. DEPT. 13-E

CINCINNATI 42, OHIO

I want to find out how to build at *less cost, faster, better*. Rush me your new catalog of STEELCRAFT STANDARD STEEL BUILDINGS.

NAME_____

CO._____

ST._____

CITY_____ STATE_____

tensions can be used with any of the firm's sectional towers and with the C-00-E carriage, supports a traffic platform and two materials platforms.

The new inserts increase the flexibility of the old system of towers with 10 ft base sections and 2 ft extensions. MORGEN MFG. CO., YANKTON, S. D.

Emergency Lighting System Is a Self-Monitoring One

A centralized emergency lighting system has been introduced that is self supervising and eliminates the need for manual inspections and testing. An automatic alarm reports on a central control board any fault or disarrangement in the system at the moment of disruption.

A 32 v nickel-cadmium battery provides the emergency power. The battery has a 25 year life span, and the electrolyte does not corrode or produce obnoxious fumes. STANDARD ELECTRIC TIME CO., SPRINGFIELD, MASS.

Chemically Inert Coating Provides Durable Finish

A protective coating under the trade name "Maintz" combines chlorosulfonated polyethylene, silicone and other resins to provide a finish that is reported to be resistant to abrasion oxidation, weathering most acids and other corrosive chemicals. Maintz dries to a strong resilient finish that is elastic and will not crack from expansion or contraction, the manufacturer says.

Maintz can be used for protection of buildings and equipment in chemical plants, refineries or other locations where corrosion or weathering presents problems in maintaining a protective finish.

One gallon of Maintz can cover about 100 sq ft. The coating is available in 1, 5 and 55 gal. containers, in white, black and gray. Pastel colors by specification are available in 55 gal drum quantities. WESTCHESTER CHEMICAL CO., BOX 39, WEST CHESTER, PA.

Lighting System Permits Variable Ceiling Plan

"Sylva-Lume", a wall-to-wall fluorescent ceiling lighting system, permits a variety of designs from a few standard parts. Single or double-layered 3 ft square plastic diffusers provide the basis for design variation. The diffusers are available in pink, white or yellow and in shallow, deep or drumhead styles.

Acoustical baffles in the same colors allow a secondary pattern within that made by the diffusers. Perimeter panels of flat steel sheet are punched with holes in a random pattern and backed with plastic. Any portion of the ceiling needed to complete the design may be filled with these panels.

H-shaped frame fixtures in 6 to 8 ft lengths support a suspension grid system that in turn supports the diffusers, perimeter panels and baffles.

The cost of the interchangeable plastic panel system is claimed to be between $2.00 and $3.00 psf for the completed ceiling. SYLVANIA ELECTRIC PRODUCTS CO., WHEELING, W. VA.

(*New Products con't. on p. 80*)

Tournatractor pushed truck-dumped gravel, mixed with large rocks, over distances that varied from 185 to 260 feet... spread this rocky material on fill for the new roadbed.

"Does nice job of sloping"

says Superintendent on 10-mile section of Massachusetts toll road

Field personnel of Gilbane Building Co., Providence, R.I., were impressed by Tournatractor's speed and production on their 10-mile Millbury-Grafton section of the Massachusetts toll road. They were pleased particularly with their Tournatractor's cable-control down-pressure blade which enables the operator to keep his blade level while dozing — prevents "blade-bouncing" and "washboard cuts".

"Tournatractor did a nice job sloping ramp of our interchange because of its down-pressure blade," said Gilbane's Road Superindent. "It's done a good job wherever we've used it."

Handles scattered assignments

Main tasks assigned to the Tournatractor on this project were leveling gravel-fill, spreading and turning up loam, backfilling, and handling clean-up. It was also used to pull a 50-ton compaction roller, maintain haul roads and build ramps for draglines and shovels.

The fast-moving, 208 hp tractor-on-rubber handled its scattered assignments in a hurry . . . traveled at fast speeds from task to task along the 10-mile project.

Gilbane's General Superintendent on this job said, "I always like to have a Tournatractor on a job because of its maneuverability. Right now ours is stripping a pit, but if I want it on the road I've got it, bingo! Tournatractor gets around fast!"

The Road Superintendent added, "Tournatractor goes all over the job fast — working in the pit and on the road. The two jobs are about a mile apart and it's doing a very good job on both of them."

Easy to operate

Tournatractor's simple-to-use controls — high-back, air-foam cushion seat — big low-pressure tires that absorb shocks in rough going — all help to reduce end-of-day fatigue, keep operator working efficiently, at maximum speeds provided.

"I've been operating dozers since '39," says the Tournatractor operator, "and I'll take Tournatractor every time. It's plenty easy to handle."

Ask for more information

This fast-traveling, fast-working tractor has a place on every job. Phone or write us for owner-verified performance reports on work similar to yours.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-987-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

Drives six-inch spike into solid concrete —with *Ramset*®

On roofs, on sidewalls, on foundations, workers sink stout fasteners into hard concrete as easily as pulling a trigger . . . and just as fast!

Does a day's work in an hour! On new construction, maintenance, electrical, plumbing or other tough fastenings — do it the easy way, with RAMSET powder-actuated fastening.

Need fasteners in a hurry? There's a RAMSET dealer near you ready to bring them. Call him now (see phone book yellow pages under Tools.)

Get the money-saving facts for your specific job from your RAMSET dealer or write for new catalog now ready.

companion tool

Shure-Set®

a hammer-in tool that uses no cartridge, but makes your hammer power more effective. For masonry, mortar joints, cinder blocks. Ask for catalog.

Ramset Fastening System

WINCHESTER WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION

12107-C BEREA ROAD • CLEVELAND 11, OHIO

Publications

Aluminum structures—An illustrated brochure on the Harvey line of aluminum structural products discusses the advantages of structural aluminum and outlines design concepts pertaining to aluminum extrusions. Mechanical properties, structural applications and a comparison of aluminum and steel sections are presented. HARVEY ALUMINUM STRUCTURES, 19200 S. WESTERN AVE., TORRANCE, CALIF.

Metal acoustic sheets—How to apply "Diamond" perforated metal sheets in the construction of acoustical ceilings, side walls and enclosures is illustrated and explained in a new 4 page bulletin. Available face patterns are shown for both ferrous and non-ferrous sheets. BULLETIN NO. 45, DIAMOND MFG. CO., WYOMING, PA.

Plywood forms—In a new illustrated brochure, Simplex describes its line of plywood forms and accessories. Hardware and assembly details are pictured in drawings. Job procedures are shown in photographs. SIMPLEX FORMS SYSTEM, INC., 2500 N. MAIN ST., ROCKFORD, ILL.

Perlite manual—An 80 page design manual developed by the Perlite Institute contains specifications, data and detail drawings for complete roof and floor systems, curtain-wall back-up, and other building sections that incorporate perlite insulating concrete or perlite-gypsum plaster. Charts and tables give U factors, dead loads and load-carrying capacity of many types of construction. Photos and a description of the features, advantages and limitations of a number of types of construction are included. PERLITE INSTITUTE, 45 W. 45TH ST., NEW YORK 36, N. Y.

Cold weather concreting—Alpha Portland Cement Co. has issued a folder dealing with cold weather concreting. It is the second in a series called "Craftsmanship in Concrete." Included are comments on antifreeze mixtures and form removal. ALPHA PORTLAND CEMENT CO., EASTON, PA.

Porcelain Panels—A revised 20 page catalog on architectural porcelain panels is offered by Davidson Enamel Products, Inc. Photos and drawings show applications in facing panels and curtain-wall construction. Detail drawings and specification data are given. DAVIDSON ENAMEL PRODUCTS, INC., 1104 E. KIBBY ST., LIMA, OHIO.

(*Publications con't. on p. 82*)

Cut new road through Carolina mountains

New, big-capacity 18-yd. Fullpak Scraper (left foreground) heaps capacity load, then swings around in 90° turn to head for fill, on North Carolina roadbuilding job. Older Model "C", in background, also carries heaped load.

To make a better, safer road out of U.S. Highway 52, near Norwood, N.C., Blankenship Brothers, Charlotte, moved 264,000 yards of tough clay and shale.

For this State Highway and Public Works Commission project, Blankenship drove in a fleet of LeTourneau-Westinghouse Tournapull-Scrapers that included one 18-yd. C Fullpak, two 16-yd. "C's", one Super C . . . plus 2 tractor-drawn LP Scrapers.

According to co-owner Ben M. Blankenship, Tournapulls were a major factor in putting dirtmoving ahead of the 270 working-day schedule.

Fullpak loads shale in 1 min.

Building this 1.85-mile section of roadway called for daylighting curves, grading, finishing, and bringing in 14" of stone base and asphalt for the new 24' wide road.

Although rain hampered operations, Blankenship's fleet worked continuously. Tournapulls easily excavated and hauled the tough-loading shale and clay. At time photographs were taken, Fullpak was heaping a load of shale over 50 to 75' in about 1 min. . . . hauled 770' downhill in 50 sec. On the far downward slope, rig spread 165' in 16 sec. . . . returned 1115' via portion of old highway in 1 min., 41 sec. . . . completed 2100' round-trip cycle in average of 3 min., 53 sec. Comparable competitive scrapers took 18% more time . . . were averaging 4 min., 35 sec. for the same cycle.

Fullpak . . . "easiest to operate"

Blankenship was very pleased with Fullpak's performance on this operation. He said, "These 'Pulls are easiest scrapers in the fleet to operate, by far. The new Fullpak loads fast." Foreman and Superintendent Banks Massey agreed with Blankenship as he said, "I sure like that new Fullpak. It's better and faster."

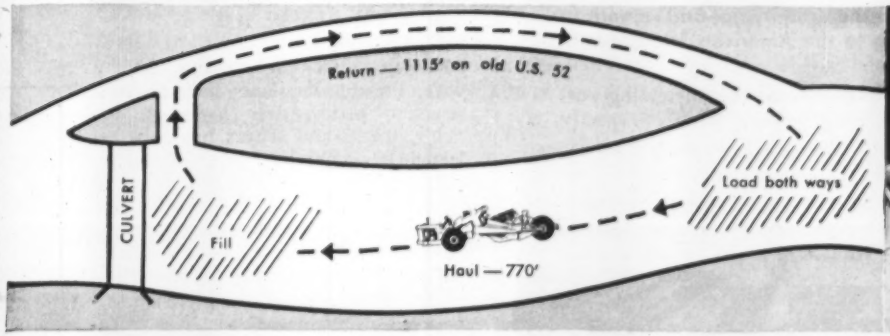
Travel job-to-job at speeds to 30 mph

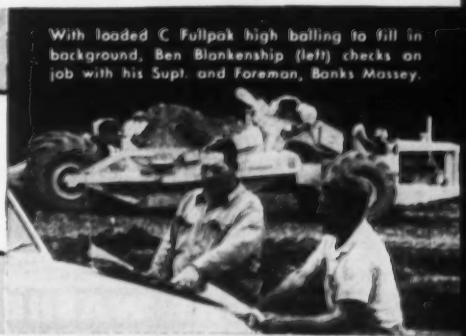
In addition to providing profitable production dirtmoving, Fullpak saved travel time and money for Blankenship Bros. Operator drove machine from Charlotte to the job site at Norwood . . . a distance of 65 miles . . . in a little over 3 hours. Machine traveled right along with regular traffic, at speeds to 30 mph. Big, low-pressure tires rolled over blacktop or new concrete without damage to pavement. Roading rig eliminated trouble and expense of truck and trailer.

Move more yards at less cost

To help you speed your jobs, check into this big-output, money-making C Fullpak Tournapull. Equipped with a new, low, wide, easy-to-load bowl, "C" heaps big pay yards faster, boils better . . . reduces your cycle time and operating costs. Call or write us for complete details.

Fullpak—Trademark, Tournapull—Trademark Reg.U.S.Pat.Off. F-1130-H-b





With loaded C Fullpak high balling to fill in background, Ben Blankenship (left) checks on job with his Supt. and Foreman, Banks Massey.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

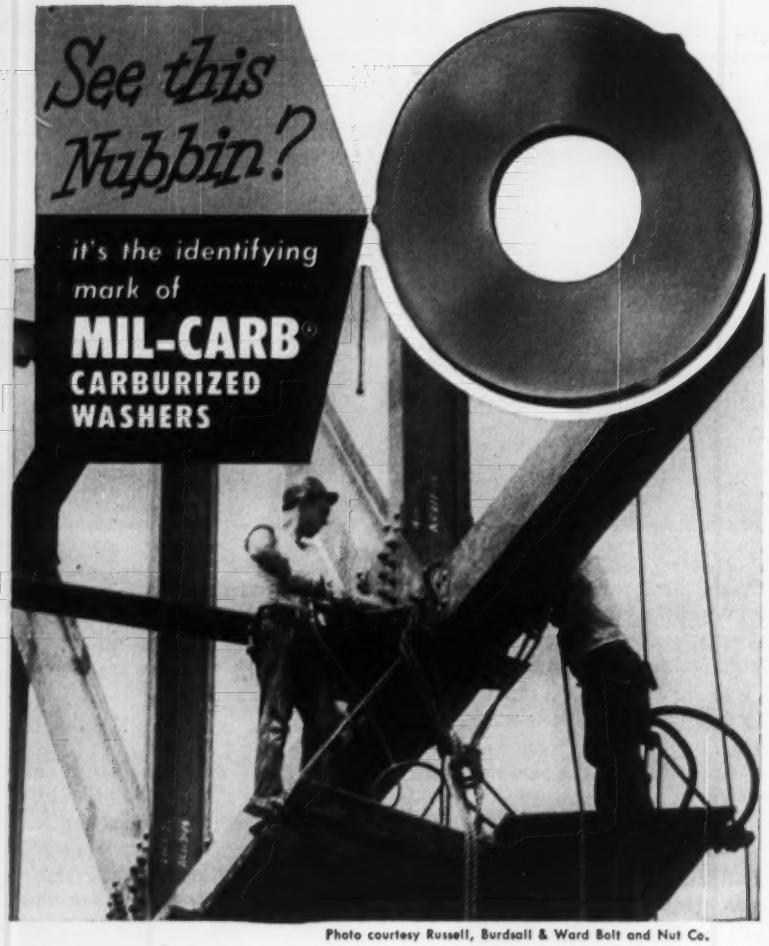


Photo courtesy Russell, Burdsall & Ward Bolt and Nut Co.

From an appearance standpoint, all washers, regardless of brands, practically look alike. But, *there's a big difference in quality!* That's why, for easy identification and to insure your getting the very best, Mil-Carb Carburized Washers are identified by 3 "nubbins" on the outside rim.

Mil-Carb washers are outstanding on at least three counts:

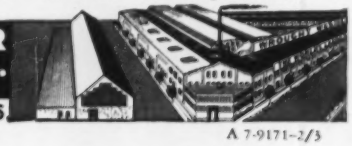
1. **Only Prime Quality Special Soundness Steel is used for strength equalling or exceeding the rigid specifications of ASTM designation A-325 *at all times!***
2. **A special treating process provides an exceptionally hard "outer skin" to resist grinding by the nut under the impact wrench *when others fail!***
3. **MIL-CARB washers are always uniformly flat and smooth with dimensions conforming to the American Standards Association.**

For your own protection and as a guarantee of the unyielding permanence of your steel structure . . . "look for the nubbin" . . . specify MIL-CARB Carburized Washers. Available in six sizes, from ⅝" to 1⅜", packed in 200 lb. kegs.

Distributed by Leading Bolt and Nut Manufacturers and

U. S. STEEL SUPPLY DIVISION
UNITED STATES STEEL CORPORATION
208 South La Salle St. • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
2224 S. BAY ST., MILWAUKEE 7, WIS.



A 7-9171-2/3

. . . Publications

Fly ash—In a new 24 page booklet published by Bituminous Coal Research, Inc., fly ash as a construction material is discussed. The booklet outlines the advantageous uses of the material, lists sources of supply by company name and location, and gives the chemical and physical specifications governing its use. BITUMINOUS COAL RESEARCH, INC., 121 MEYRAN AVE., PITTSBURGH 13, PA.

Acoustic wall panels—Features, applications and specifications of Tectum Sidewall Panels for industrial sound control are outlined in an 8 page catalog. Also given are erection procedure, design and loading tables and section properties of the panels. CATALOG C-100-A, TECTUM CORP., 105 S. SIXTH ST., NEWARK, OHIO.

Plywood painting—A 29 page laboratory report, "Exposure Fence Studies of Painted Douglas Fir Plywood," is issued as an aid in determining proper painting applications to fir plywood. The report evaluates the condition of fir plywood and original and repaint coatings tested for 10 years under varying weather conditions. DOUGLAS FIR PLYWOOD ASSOCIATION, TACOMA 2, WASH.

White Pocket Lumber—A 6-page bulletin issued by the West Coast Lumbermen's Association explains the cause of white pocket in lumber. The bulletin includes sections on the effect of white pocket on strength and stiffness. Suitable uses for affected lumber also are discussed. WEST COAST LUMBERMEN'S ASSOCIATION, 1410 S. W. MORRISON ST., PORTLAND 5, ORE.

Steel data—A revised edition of the pocket size Ryerson Steel Data book gives information on machining and fabrication, specifications and tolerances, weights, dimensions, elements and safe loads. A companion to the Ryerson Steel Stock List, the 256-page book includes tables, definitions and general data. J. T. RYERSON & SON, INC., BOX 8000-A, CHICAGO 80, ILL.

Materials—A 28 page catalog dealing with Presstite-Keystone line of construction material for highways, airfields, streets and sewers has been released. PRESSTITE-KEYSTONE ENGINEERING PRODUCTS CO., 39TH & CHOUTEAU AVE., ST. LOUIS 10, MO.

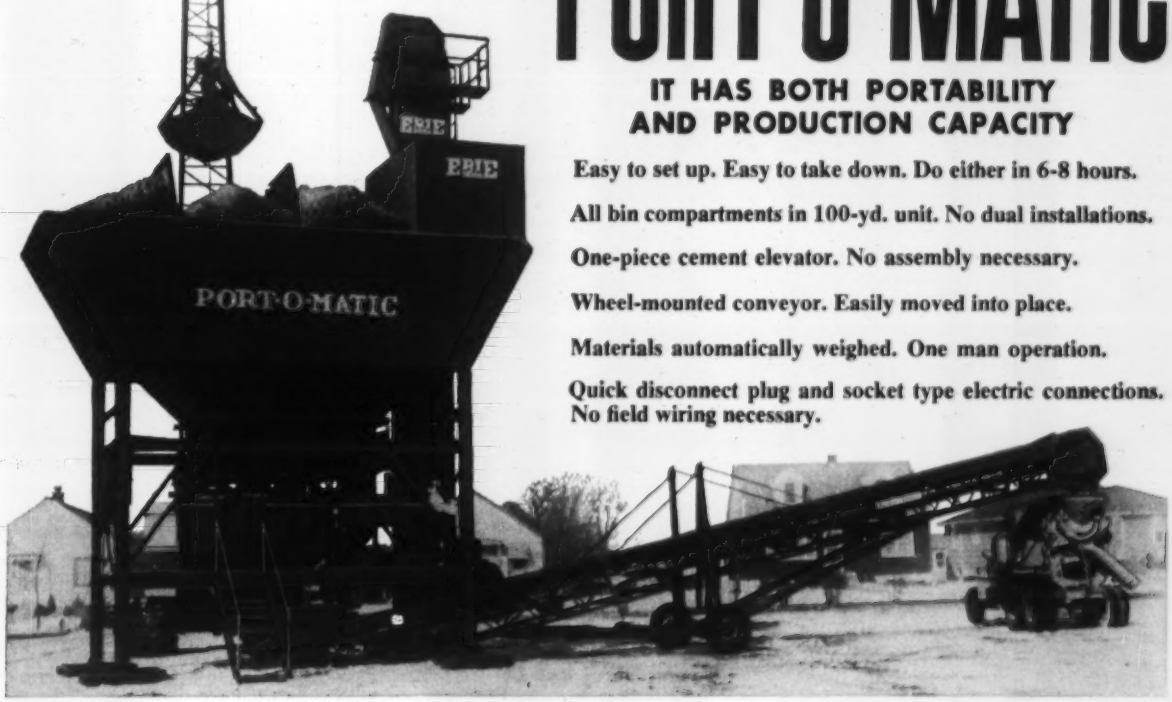
Surveying instruments—A 4-color catalog contains information on the complete line of David White precision surveying instruments. DAVID WHITE INSTRUMENT CO., 2501 N. 19TH ST., MILWAUKEE, WIS.

(Publications con't. on p. 84)

Your Answer to a Portable Truck Mixer Plant...

ERIE'S NEW PORT-O-MATIC

IT HAS BOTH PORTABILITY AND PRODUCTION CAPACITY



Easy to set up. Easy to take down. Do either in 6-8 hours.

All bin compartments in 100-yd. unit. No dual installations.

One-piece cement elevator. No assembly necessary.

Wheel-mounted conveyor. Easily moved into place.

Materials automatically weighed. One man operation.

Quick disconnect plug and socket type electric connections. No field wiring necessary.

ALL WEIGHING BATCHERS, SCALES, WATER METERS, ETC., IN ONE CENTER SECTION

Now, for the first time, every important feature you need in a portable plant, to do a job and make money. Combined in one, compact, fully automatic, completely portable plant. Port-O-Matic can be moved quickly, easily and profitably.

REALLY PORTABLE: Erie's new Port-O-Matic is made up of 4 easy-to-handle sections, specially designed for quick set up and take down.

COMPLETE PLANT: Here's a one-package deal. You'll need no extras. Everything, air lines, compressor, plumbing, pump and meter, permanently installed. All electric wiring is conduit protected. Plug-in connections are quick and positive.

FULLY AUTOMATIC: 6-yd. weighing batchers with push button discharge control. That's all your operator has to do. All controls are within operator's easy reach.

TRUCK MIXER CAPACITY: Portability isn't all. You get capacity, too. Port-O-Matic plants do better than 150 cu. yds. per hour.

NO FOUNDATIONS NEEDED: Set up your Port-O-Matic on any level surface. No pits, no poured concrete bases needed. Combination mud sills and column supports give Port-O-Matic all the bearing area it needs.

YOU'LL LIKE THIS: Inching controls on all aggregate gates and valves provide fast and accurate weighing. Also gives uniform loading on belt conveyor which tends to premix and reduce dusting.

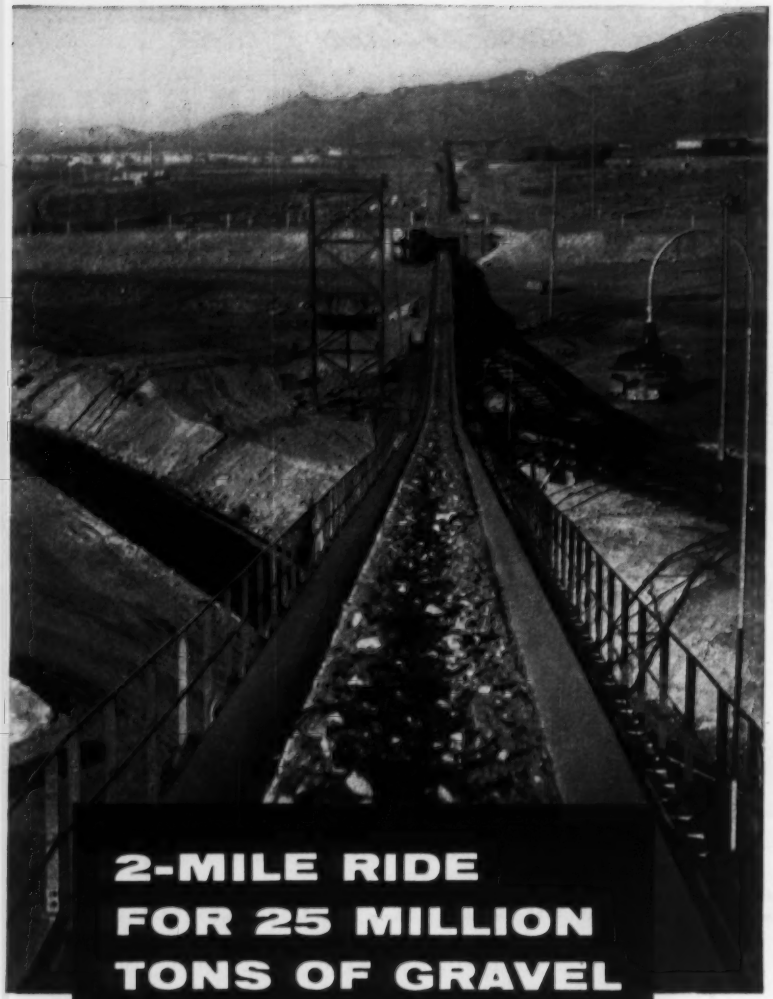
ONE-PIECE ELEVATOR: Port-O-Matic gives you this important time-saving feature. It's factory assembled for field erection. Stays in one piece.

ONLY PORT-O-MATIC: gives you all these important features in one easy to set up, easy to move unit that lets you bid low and keep profits up. Get the whole story before you buy. Do it today.

WRITE DEPT. NO. R37

ERIE STRAYER COMPANY

237 GEIST ROAD — ERIE, PENNSYLVANIA



To help build Southern Pacific Railroad's 13-mile roadbed across Great Salt Lake, Morrison-Knudsen Co. had Hewitt-Robins develop a bulk materials handling system. In ton-miles-per-hour capacity, this system surpasses any previous belt conveyor installation. Its conveyors travel at speeds up to 850 fpm, carry 75,000 tons of rock and gravel per day, load barges at 12,000 tons per hour.

The entire installation—including 3 scalpers, 13 conveyors, 23,000 feet of belting, 4,700 idlers, a 164-ft. radial stacker, 10 belt feeders, 2 recovery conveyors and 27 speed reduction drives—was designed, manufactured and delivered by Hewitt-Robins in less than eight months. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Conn.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

. . . Publications

Overhead doors—Specifications and instructions for preparing building openings and installation of the Barcol line of residential, commercial and industrial overhead doors are given in a 16 page catalog. Electric operators, radio and special controls are described and illustrated. Solutions to special problems also are included. BARCOL OVERDOORS, BARBER-COLMAN CO., DEPT. 5A, ROCKFORD, ILL.

Surface Protectives—A 20 page catalog lists A. C. Horn Companies' products for protecting the surfaces of construction materials. Listed are metal, wood and masonry coatings, chemical color additives, sealers and paints. Description, use, specifications and quantities required for calking, dampproofing and joining material are included. A. C. HORN COMPANIES, 10TH ST., AND 44TH AVE., LONG ISLAND CITY 1, N. Y.

Heating-ventilating units—Carrier's new catalog of heating and ventilating equipment for schools, auditoriums, gymnasiums and other large-area buildings describes six different models with 72 coil capacities and arrangements. Hot-water and steam ratings, and fan performance are given in charts and tables. Instructions for proper selection of equipment are included. CATALOG 46-PQRV-72, CARRIER CORP., SYRACUSE, N. Y.

Crushers—The new Pioneer 44-45 Series of portable crushing and screening plants is the subject of two pieces of literature just issued. The new duplex-type plants have a four-deck screen, which allows high total production of one, two, three or four sizes of closely graded products. PIONEER ENGINEERING, DIV. OF POOR & CO., INC., 3200 COMO AVE., MINNEAPOLIS 14, MINN.

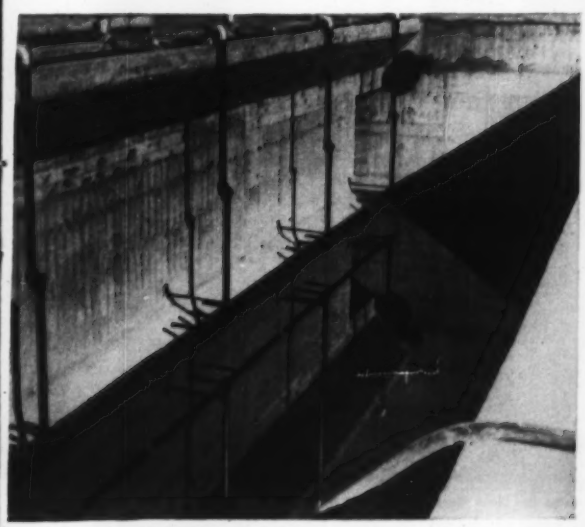
Scraper—The design, engineering, construction and operating features of the Allis-Chalmers TS-360, 20 cu yd motor scraper are described in a new 16 page catalog. CONSTRUCTION MACHINERY DIV., ALLIS-CHALMERS MFG. CO., MILWAUKEE, WIS.

Pump selection—A ready reference chart for quickly spotting the type of pump best suited to specific construction jobs is one of the features of a new catalog of the Barnes line. BARNES MFG. CO., MANSFIELD, OHIO.

Fork Trucks—A new 4 page folder, illustrating and describing the "Safe-Hite" electric powered fork truck, which has a 2,000 lb capacity, has been published by ELWELL-PARKER ELECTRIC CO., CLEVELAND, OHIO.

The Columbus, Ohio, Sewage Treatment Plant relies on wrought iron pipe's protective properties in tough, corrosive service

21-year service record provides good reference for Wrought Iron Pipe railing job here



View of wrought iron air diffuser piping in Columbus, Ohio's Sewage Treatment Plant

Wrought iron served so well, so long in corrosive atmosphere surrounding the Columbus, Ohio, Sewage Treatment Plant, that engineers selected this material again for use in the plant's new $2,500,000 addition.

On the job in the original plant since 1935, wrought iron was used for all pipe services two inches and under. In the new addition, 90% of the wrought iron used was for guard railings, 1½ inches in diameter. The remainder of wrought iron tonnage on this installation went into gas lines and miscellaneous piping, including the grease ejector mechanism vault and the air diffuser piping.

We can prove to you how wrought iron outperforms other materials in a variety of applications. Our bulletin — *Wrought Iron for Sewage Treatment and Disposal Installations* — contains the evidence. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa., Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y.

Available in Canada and throughout the world

City of Columbus Sewage Treatment Plant Addition
Engineers: Uhlmann & Associates
Contractors: George S. Shoaf & Co., Inc., and E. P. Coody & Co. (A Joint Venture)
Fabricator: Columbus Metalcraft Co.

BYERS *Wrought Iron Tubular and Hot Rolled Products*

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

Highway Builders...don't neglect

This is how steel pipe snow melting systems can keep strategic highway areas free from snow and ice as illustrated by this effective installation on a toll plaza of the Indiana Turnpike.

The attractive approaches to the New York Bus Terminal, at left, are winter-proofed with a steel pipe snow and ice melting system. Photo at right illustrates how effectively heavy snow is melted from it.

steel pipe snow melting

for real "all weather" highways in the national road program.

The continued mobility of America is now assured by the 13 year—33 billion dollar—41,000 mile National Interstate Highway System program.

With 65 million cars, busses and trucks already on the highways and streets, it is essential that the new interstate system include every modern feature not alone for today but for decades to come.

Automatic steel pipe *Snow Melting* is one of these essentials if the new highways are to be truly "all weather" arteries . . . at strategic points of entrance and egress, overpasses, ramps, bridge floors and elevated sections where snow or ice may impede traffic flow or cause hazardous conditions.

Already steel pipe snow melting systems have been installed with great success in such public works as at the toll gates of the new Indiana Turnpike, the ramp approaches to the New York Bus Terminal and Staten Island Ferry Building, and in countless loading decks, plant approaches and airport hangar aprons. For such installations *steel pipe is first choice* because its economy and proved reliability make an investment in automatic snow removal practical, just as it is for electrical raceways, steam and air lines, radiant heating, plumbing and fire sprinkler systems.

Send for the free booklet, "Steel Pipe Snow Melting and Ice Removal Systems."

Committee on

STEEL PIPE RESEARCH

Steel Pipe is First Choice

American Iron and Steel Institute
150 East Forty-Second Street,
New York 17, N. Y.

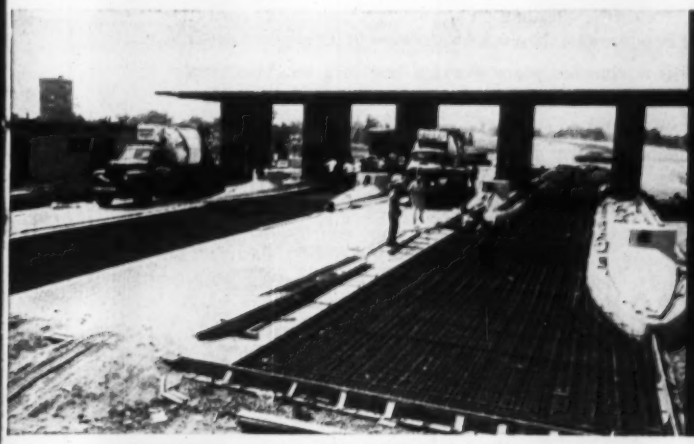
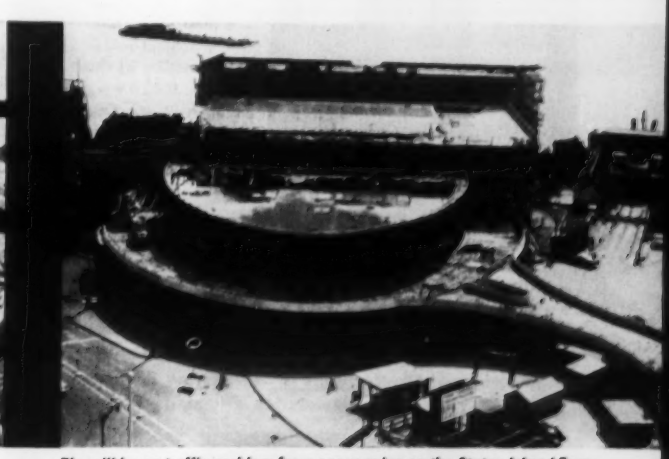


Photo shows steel pipe snow melting grids in the process of installation on the toll plazas and plaza approaches of the Indiana Turnpike.



There'll be no traffic problem from snow or ice on the Staten Island Ferry ramp thanks to this modern steel pipe melting system. Photo shows installation of grids.

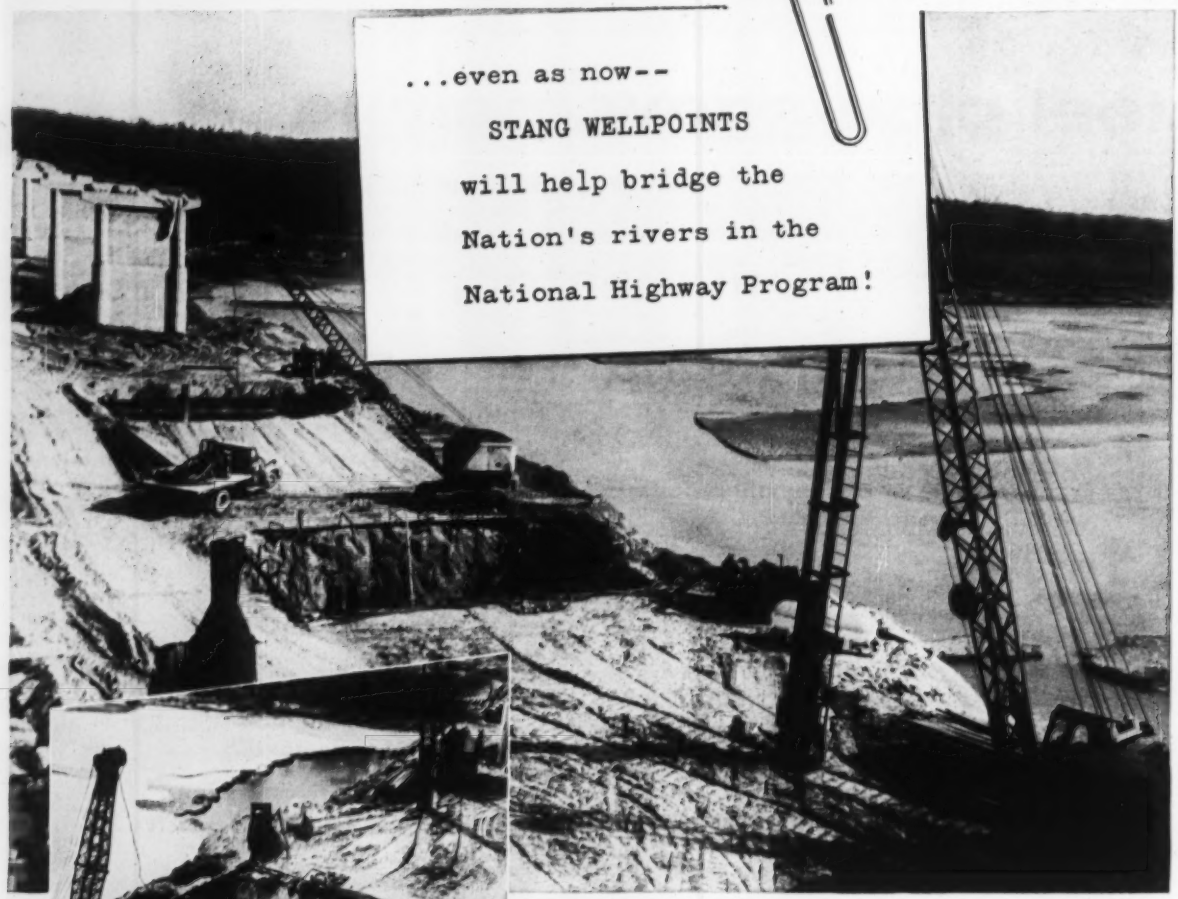
...even as now--

STANG WELLPOINTS

will help bridge the

Nation's rivers in the

National Highway Program!



The Contractor: Imperial Paving Co., of Oklahoma City; Ray Lynch, General Superintendent; John Hurst, Job Supt.

The Project: Bridging the Red River on U. S. Highway 77 between Marietta, Oklahoma and Gainesville, Texas.

The Problem: To erect 13 reinforced poured concrete piers across the Red River necessitating excavation up to a maximum depth of 16 feet below water level.

The Solution: Installing a Stang Wellpoint system progressively around each pier location on a previously constructed earthen dyke thus lowering the ground water level to the required depth.

Result: A completely dry working area in a water-saturated riverbed making possible a *time-saving and profitable job!*

Call on STANG engineers for experienced services and special equipment to solve your water handling problems—any size, any type, *anywhere!* STANG engineers are on call in your area for consultation day or night.

GENERAL PUMPING including High Pressure Jet Pumps, Large Capacity Sump Pumps (vertical or horizontal), Hydraulicking and Sluicing Systems and Sprinkler Irrigation Equipment.

The Red River bridge is a joint Texas-Oklahoma project under the direction of the Texas Highway Department, Mr. John G. Simpson, resident engineer.

Write for bulletin 100

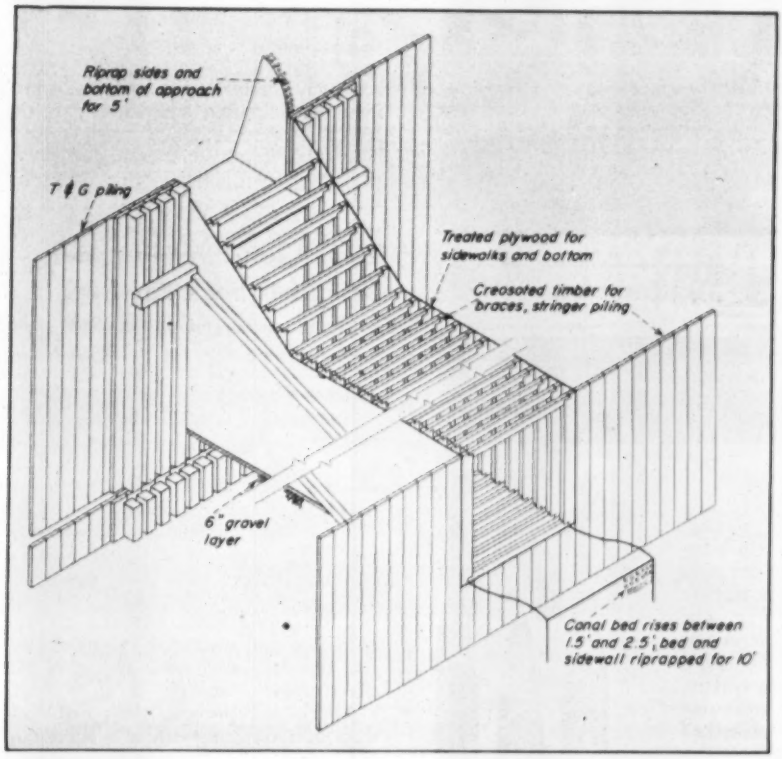
Putting water in its place

571 ...anyplace!

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems
Dewatering Planning—Equipment—Service

BELL, CALIFORNIA	OMAHA, NEBRASKA	TACOMA, WASHINGTON	TULSA, OKLAHOMA
8221 Atlantic Avenue	2123 South 56th Street	2339 Lincoln Avenue	4026 South Urbana Street
Telephone: LUdlow 2-7421	Telephone: Walnut 7796	Telephone: Broadway 4362	Telephone: Riverside 2-6929


Riprap sides and bottom of approach for 5'
T & G piling
Treated plywood for sidewalks and bottom
Creosoted timber for braces, stringer piling
6" gravel layer
Canal bed rises between 1.5' and 2.5', bed and sidewall riprapped for 10'

WOODEN DROP STRUCTURES are being tested as substitute for concrete.

Canal Building Materials Are Tested

High in the Peace River north country of Alberta, Canada, some 500 miles above the Montana border, an interesting study in canal building materials is under way.

The Water Resources Branch, Alberta Department of Agriculture, has almost completed an 18 mile canal, half of which is lined with treated plywood, precast concrete and corrugated metal. In the unlined portion, wooden drop structures of treated plywood and creosoted timber have been substituted for the normal concrete.

Purpose of the test project is a comparison of the different materials on a price and performance basis. It will take about two years to reach useful conclusions since the dominant factor will be how well the wooden structures stand up.

There are 14 wooden drop structures to control erosion spaced over a 160 ft fall in the earthen portion of the canal, all constructed on the order of the accompanying sketch. Drops range from 4½ to 9 ft, widths from 4 to 8 ft, lengths from 16 to 24 ft, and design flows step up from 10 cfs at the beginning to 150 cfs at the canal terminus. The canal is multipurpose, serving to drain farm land during spring runoff and to provide domestic water to towns along the route.

Both the plywood and precast concrete flumes lining the canal have trapezoidal cross-sections. The wooden lining is prefabricated in 8-ft-long sections that are braced across the top every 4 ft. Cant strips are inserted where sidewalls intersect bottom panels. Horizontal and vertical cutoffs of thin metal are employed as necessary.

The concrete lining is precast with 4 in. wall and bottom thicknesses and has integral chamfers corresponding to the cant strips in the wooden flumes. There is no bracing across the top. For sidewall joints, adjacent sections have matching semi-circular grooves into which is inserted rubber hose. The same arrangement is used for the slabs except that a notch is added, similar to a standard paving construction joint. Outsides of joints are lined with heavy building paper.

Corrugated metal flumes are semicircular and are secured by ⅜ in. metal rods around the perimeter fastened to 2x4 in. wood braces across the top. Metal cutoff plates are welded to the flume rods.

In reference to the wooden drop structures, a canal engineer has stated that they cost about one-third of concrete, but any savings will depend on how the wood stands up.

Water Purification

Army develops bigger water treatment plant

The Corps of Engineers has come up with a packaged water plant that can purify water at rates up to 12,000 gph —enough to satisfy emergency requirements of 50,000 people. And it takes only one man to operate.

The new plant, designed for field erection, consists of three main all-aluminum sections: an "Erdlator" and two gravity type sand filters. The Erdlator —also used in the Army's earlier truck-mounted unit (ENR Sept. 24, 1953, p. 39)—is a cone-shaped upflow coagulation basin 14 ft in diameter.

Polluted water pumped into the Erdlator is aerated, thoroughly stirred in the cone-shaped mixing tank with chemicals that include a coagulant (ferric chloride), a coagulant aid (pulverized limestone) and a disinfectant (calcium hypochloride), and passed through a strainer where suspended particles are removed.

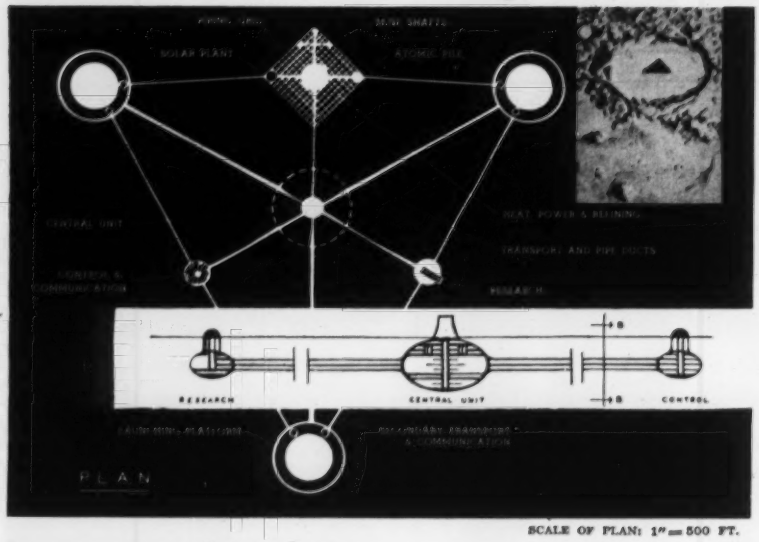
Water then goes from the Erdlator into two open type gravity sand filters operated in parallel. Filtered water is collected in a bolted aluminum water storage tank for pumping into a pipe distribution system. Time from polluted to potable water is approximately 20 minutes.

Developed by the sanitary engineering branch of the Corps' Engineer Research and Development Laboratories, Ft. Belvoir, (from whence come the Erdl in Erdlator) the plant is undergoing troop tests, producing drinking water from the polluted Potomac River. It is housed in a 40x40 ft building and is the largest in the family of water purification units developed by the Laboratories.

Vermiculite-Treated Slab Gets 4 Hour Fire Rating

Vermiculite plaster applied in a 1 in. thickness to the underside of a reinforced concrete slab that ordinarily would have a fire rating of only ½ hour upped the rating to 4 hours. The ad-

MARS outstanding design **SERIES**



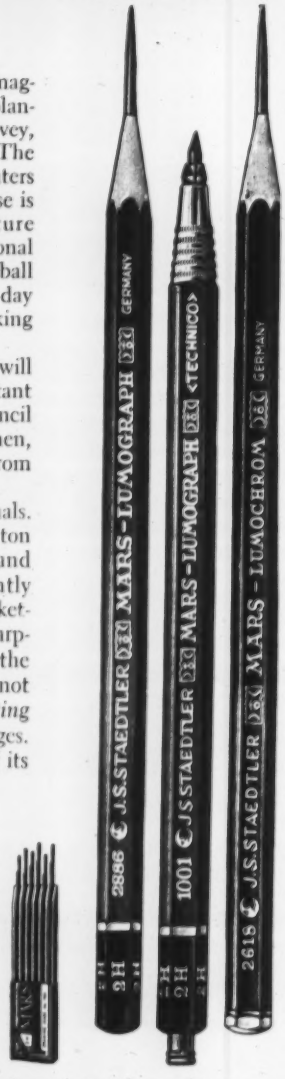
SCALE OF PLAN: 1" = 500 FT.

lunar base

Tomorrow's realities depend on research and imagination today. Both were used extensively in the planning of this lunar base designed by William G. Harvey, Jr. to accommodate space ships and travelers. The suggested location is "Aristotle," one of the craters near the north pole of the moon. Most of the base is beneath ground level to minimize temperature changes. Living quarters are spacious and recreational facilities include a swimming pool and basketball court. Power is supplied by solar plants during the day and atomic pile at night. Research, living and working areas are joined by monorail subway.

No one can be sure which of today's new ideas will become reality tomorrow. But it will be important then, as it is now, to use the best of tools when pencil and paper translate a dream into a project. And then, as now, there will be no finer tool than Mars—from sketch to working drawing.

Mars has long been the standard of professionals. To the famous line of Mars-Technico push-button holders and leads, Mars-Lumograph pencils, and Tradition-Aquarell painting pencils, have recently been added these new products: the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman's" Pencil Sharpener with the adjustable point-length feature; and—last but not least—the Mars-Lumochrom, the new colored *drafting* pencil which offers revolutionary drafting advantages. The fact that it blueprints perfectly is just one of its many important features.



The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom colored *drafting* pencil, 24 colors.

J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY

at all good engineering and drawing material suppliers

hesion and resistance to cracking of the vermiculite plaster was demonstrated by the fact that no plaster fall occurred during the 4 hour test.

The test was sponsored by Mandoval, Ltd., and conducted by the Fire Research Station of the British Department of Scientific and Industrial Research on a 3¼ in. thick concrete slab. The American Vermiculite Corp. is planning to duplicate this test for U. S. observation and record.

Does Cloud Seeding Help? Scientists Seek Answer

"Randomized" cloud seeding is to be tried in Santa Barbara County, Calif., to get an answer to the question of whether seeding really increases rainfall.

Briefly, this method allows a meteorologist to select at will opportunities for seeding—but he is not allowed to seed every opportunity. Once an opportunity is identified, chance—a tossed coin—decides whether the cloud seeding is to be done. Rainfall records, however, will be kept of all opportunities' seeded and unseeded. In this way the comparison between records of seeded and unseeded storms should give definite conclusions regarding the effectiveness of seeding.

This system prevents the possible effects of forecasting—where a meterologist might tend to pick those storms that will bring more rain than the selected standard of comparison.

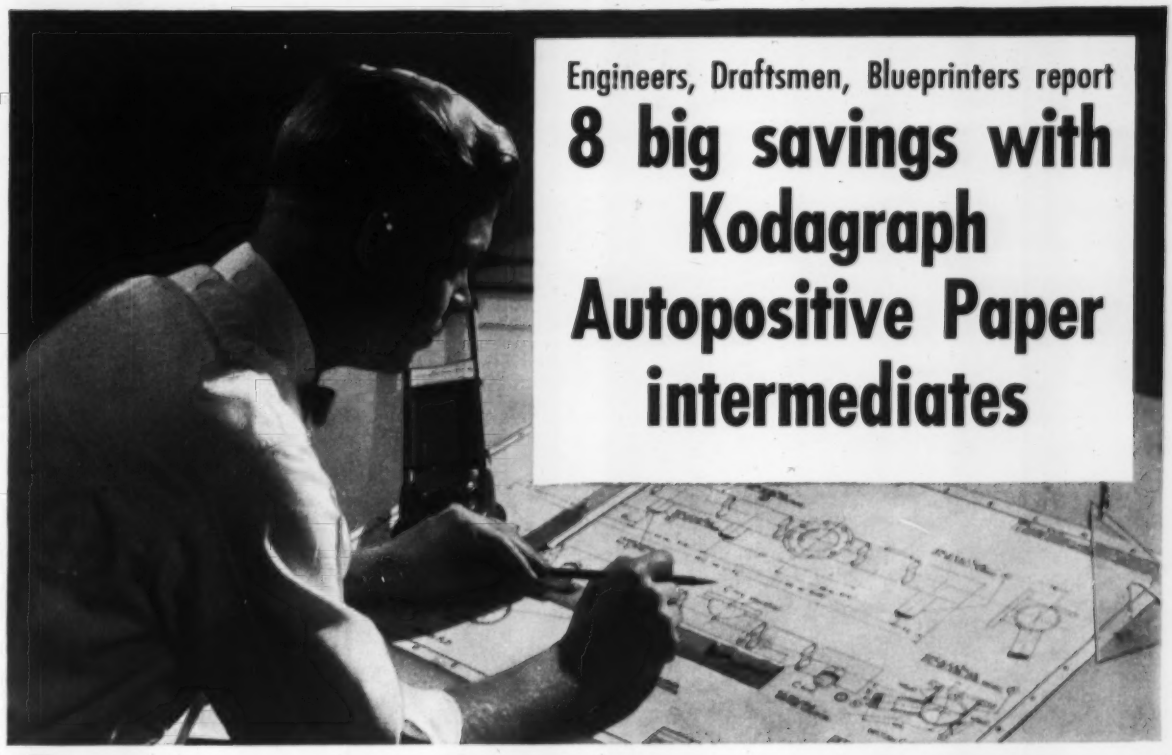
A three year seeding experiment using the randomized method already has been started under a $45,000 appropriation by the Board of Supervisors of Santa Barbara County. The plan was designed by the statistical laboratory of the University of California at Berkeley. North American Weather Consultants will carry out the seeding operations.

Hexadeconal Film Used to Cut Evaporation Losses

Hexadeconal, a white, waxy solid that floats on water, is being used to cut evaporation losses by 25% in some water storage areas in Australia.

The Mansfield process, as it is called, introduces a very thin film of the insoluble chemical onto the surface of the water. Beads of hexadeconal, confined is a gauze basket and floated in the water by means of a raft, supply additional hexadeconal to heal the film as it breaks.

Developed by the Commonwealth Scientific and Industrial Research Organization in Melbourne, the method is recommended only for areas up to two acres on which waves are small.



Engineers, Draftsmen, Blueprinters report

8 big savings with Kodagraph Autopositive Paper intermediates

Revolutionary Kodagraph Autopositive Paper, which produces positive photographic intermediates *without a negative step or dark room handling,* brings these savings to drafting rooms large and small.

1. Protects original drawings. Low-cost Autopositive Paper intermediates are used instead of valuable originals in printmaking, reference, mailing, and making revisions.

2. Reclaims drawings which are old, worn, or soiled. Reproducing them on Autopositive Paper cleans up backgrounds, strengthens line detail . . . eliminates redrafting.

3. Improves legibility of prints. Blueprints or direct-process prints made from Autopositive Paper intermediates are consistently easier to read than prints made from original drawings.

4. Reproduces "unprintable" originals. When extra copies are needed of blueprints, drawings on opaque stock, two-sided originals, and other "unprintables," just reproduce them on Autopositive Paper *and you have your printmaking masters.*

5. Speeds revisions of drawings. A popular short cut is to cut out or eradicate detail on an Autopositive Paper intermediate . . . and then add the new detail to this print or one made from it.

6. Eliminates redrafting standard component designs. From a file of standard component designs made on Kodagraph Autopositive Film, select the ones needed and attach to drawing form with translucent tape. Then reproduce on Autopositive Paper, add new detail and the job is done.

7. Simplifies print distribution. Instead of shipping bundles of production prints, send Autopositive Paper intermediates. Mailing costs are saved. Required number of prints can be made at other end. No overstocking this way . . . or running short of prints.

8. Provides photo-lasting copies. Autopositive Paper intermediates, with dense black photographic lines on a translucent white paper base, will not turn yellow or become brittle in the files; will produce sharp, legible prints whenever needed.

New illustrated booklet gives full story on Kodagraph Autopositive Paper, which you, or your local blueprinter, can process readily with existing printmaking equipment and standard photographic processing.

Kodagraph Reproduction Materials

MAIL COUPON FOR FREE BOOKLET

EASTMAN KODAK COMPANY
Graphic Reproduction Division, Rochester 4, N. Y.

Gentlemen: Please send me a free copy of your new booklet on Kodagraph Reproduction Materials.

67-3

Name_____

Position_____

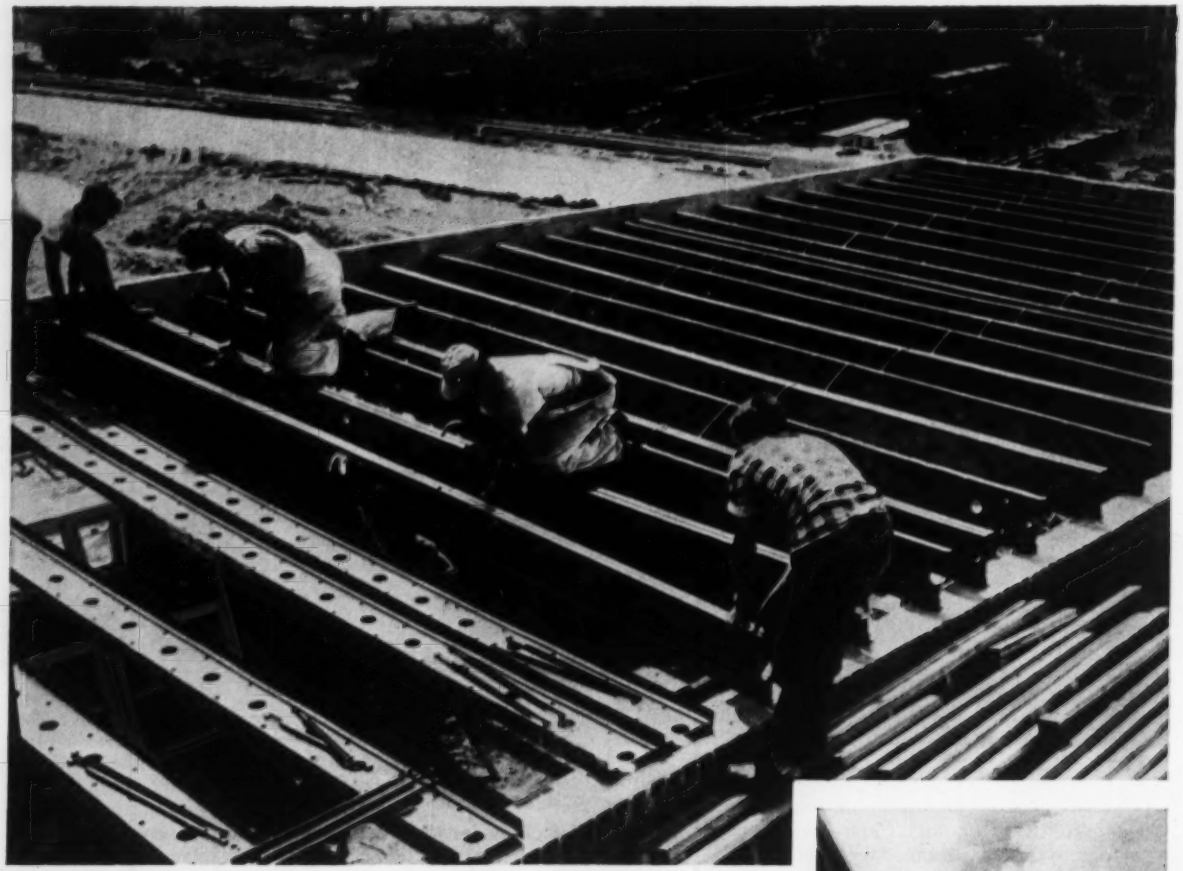
Company_____

Street_____

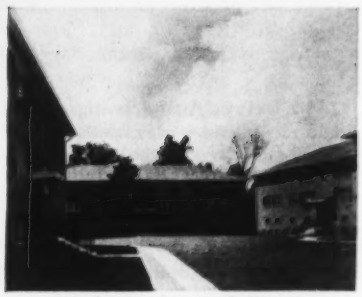
City_____

Zone_____ State_____

Kodak



LIGHTSTEEL FLOOR SYSTEM cuts 55% from insurance rates for apartment development



Architects: Corning & Moore
Structural Engineer: Milton Kellert

Fireproof construction offered twin advantages for the owners of the Shirley Park apartment development, Arlington, Virginia. It could mean big annual savings in the cost of insurance, and obvious rental benefits.

A problem was the type of floor system to use. Wood joists were out. Their initial cost was right but they did not qualify for the lowest insurance rates. The only possibility was a system utilizing steel and concrete — but economically.

Penmetal's LIGHTSTEEL floor-joist system did the trick. It afforded all the advantages of conventional steel joists, but without the waste and high costs of overdesign. Insurance rates were 55% lower than a system using wood. *In 13 years, insurance savings alone will pay off the small added cost of* LIGHTSTEEL.

And the owners saved in construction, too. Economies included: speed of erection, availability of materials, and light weight which eliminated the need for heavy erection equipment. The job superintendent's records show that an entire floor-joist system for one apartment building (area 75′ x 38′) was erected in two hours by four men.

M. T. Broyhill & Sons Corporation of Arlington, builders, owners, and operators of these ultra-modern apartments, feels that the LIGHTSTEEL system is the most economical for apartments, as well as for commercial and institutional buildings.

Architects: Here is a place you can design for real savings. For further information, send for catalog and technical manual.

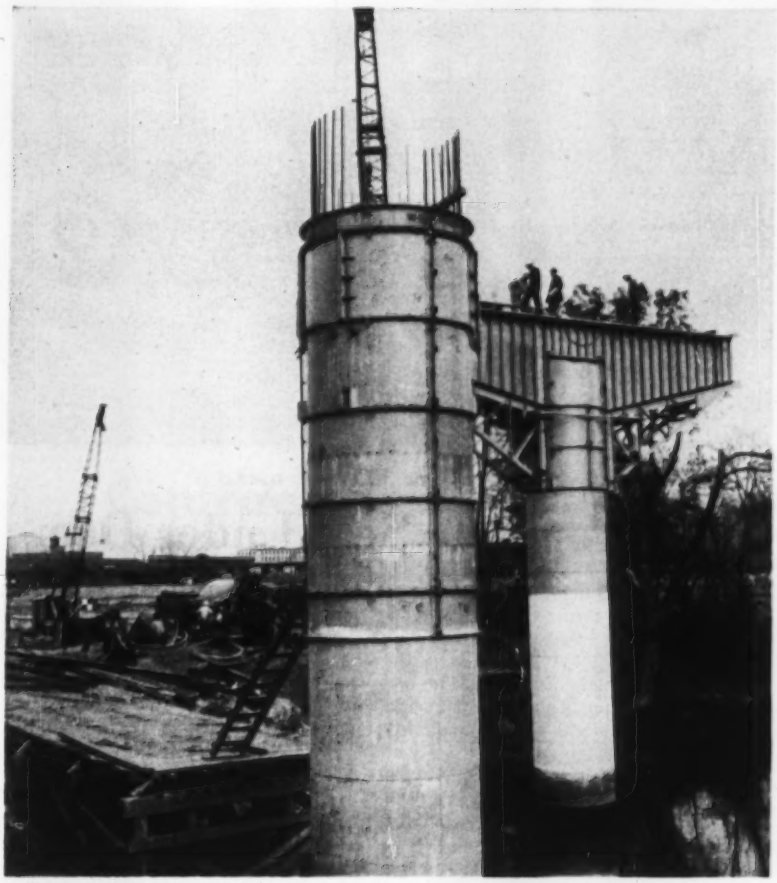
PENN METAL COMPANY, INC.

General Sales Office:
40 Central Street, Boston 9, Mass.
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

Penmetal
METAL MADE
1869
SPECIALTY

PM-95

Columns Built Up With Free-Standing Forms



COMPLETED COLUMNS (alongside a temporary access road) will carry two 40 ft roadways. Deck spans will be of steel rolled beams with composite slab construction.

The substructure of the 4,182 ft James River Bridge at Richmond, Va., is made up of one hundred 7 ft 9 in. dia columns topped by 44 ft wide T-heads. The fabricator of the forms for these columns had to meet two special requirements:

1. Specifications requiring the rustication grooves on the columns to be in line though column heights vary.

2. The contractors wanted formwork that needed no exterior guying.

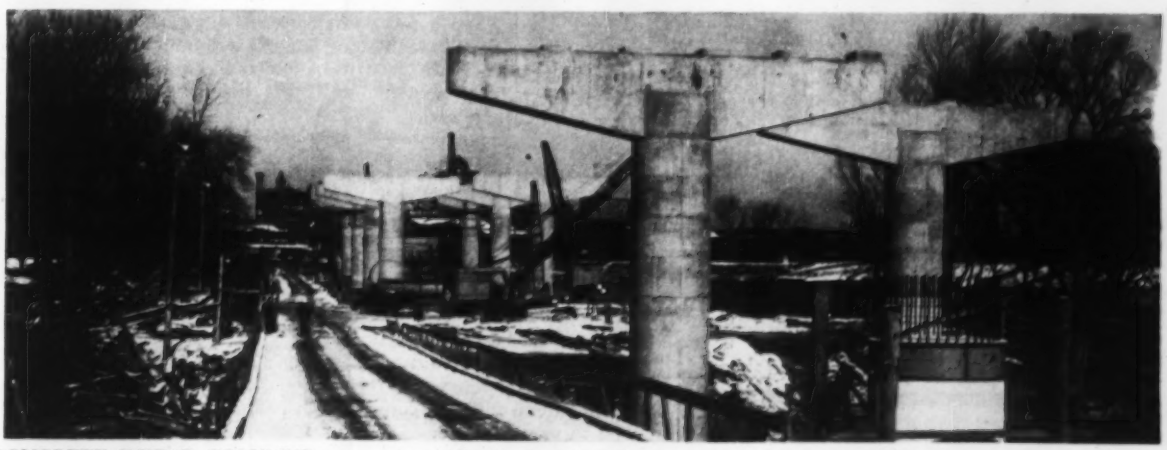
To satisfy these requirements, the Blaw-Knox Co. of Pittsburgh designed an adjustable, telescoping steel form for the initial pour atop the foundation. This form is adjustable from fractions of an inch to multiples of a foot, so that regardless of the footing elevation, the grooves on all the piers will line up.

Guying for the circular column forms was eliminated by using a 2 ft lap ring. Setting up for each pour, the contractor installs as many circular 4 ft sections as required and tops these with the 2 ft lap ring. The pour, usually made in 16 ft lifts, is to the top of the lap ring.

After the concrete sets, all the sections below the lap ring are removed and reset on top. The lap ring, left in place, is held by the two feet of concrete inside it and supports sections for the new pour above.

Guying and shores were eliminated for the forms for the T-head by fitting special circular sections at the top of the column with hangers for cantilever trusses supporting the base and bulkheads of the T.

(*Field and Office continued on p. 94*)



CONCRETE T-HEAD COLUMNS were constructed with steel rings that were supported on completed lifts.

★ ★ ★ ★ ★

FIRST
STEEL MESH DECK
Still Making History!

The first installation of an open steel grid flooring on any bridge in the world was made in 1932, on the University Bridge, Seattle, Washington, by the Irving Subway Grating Co. The previous solid pavement on the bridge had been plagued by frequent repairs and accidents.

After 24 years this decking is still in service on the Seattle Bridge. It has had no major repairs and has never even been painted. Not a single accident has occured due to the bridge flooring.

Since then, 80% open Irving Decking has been used advantageously on hundreds of other bridges.

This remarkable record of service speaks for itself.

★

Write for complete information on Irving Bridge Decking.

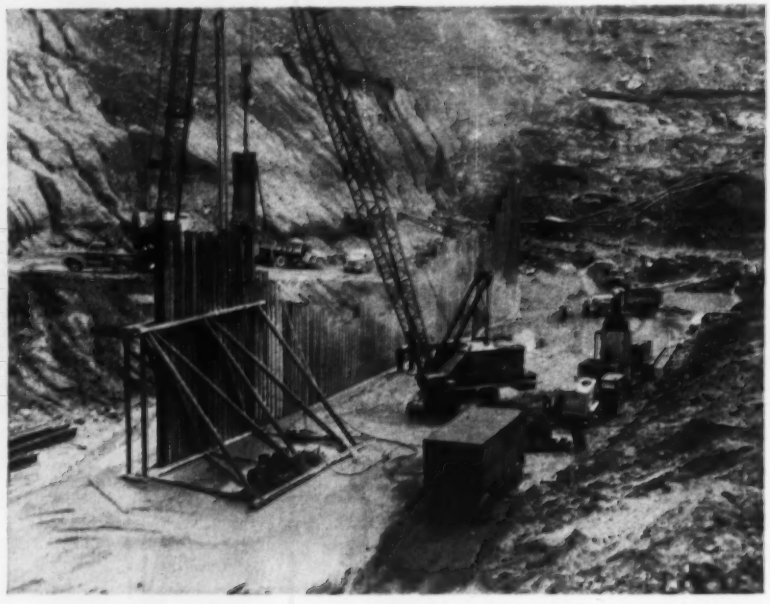
ECONOMICAL
SAFE
DURABLE

"A Fitting Grating for Every Purpose"

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA



Cells formed by H-beams are filled to make a . . .

Steel, Concrete Seal Under Dam

A steel and concrete curtain, down to bedrock and across the riverbed, to provide a positive seal under what will be the world's highest rock and earth-fill dam is nearing completion. The unusual water barrier is going in at Pacific Power & Light's $46 million Swift hydroelectric project on the Lewis River in Washington. The dam itself, to be 510 ft high, 2,000 ft long and 2,100 ft thick at the base, is expected to be started this spring.

Some 63,000 lin ft of H-beams and sheetpiling weighing 1,258 tons are going in upright for the cutoff. Sheet piling is welded to each flange of the E-beams and interlock as each set is driven to bedrock. These form a row of 18x15 in. steel cells, from which ground material is jetted out with air and water. Concrete then is poured into the cells to form a tight seal.

The modified cutoff was necessary because of conditions posed by a thick layer of gravel and silt on top of the bedrock. After 900,000 cu yd of materials were excavated, the exposed stream bed was leveled. The piling is being driven the remaining depth to bedrock, ranging to 80 ft at the center of the 300 ft wide cutoff.

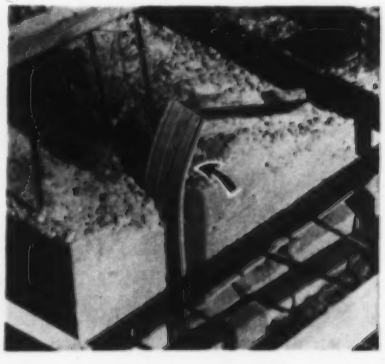
With the bottom of the curtain on bedrock, the top edge is to be encased by a triangulary shaped concrete wall 30 ft high. This will extend into the core zone of the dam to prevent seepage.

The piles are being set in by 8,000 lb. blows of a steam hammer held by a long boom crane. Another crane manipulates the jet. A heavy tubular steel template jig 55 ft across guides the sections as they are being driven.

Ridged Plastic Ribbons Used as Waterstops

On the St. Lawrence Seaway project, long ridged ribbons of Bakelite vinyl resins are being used as diaphragm-type waterstops for expansion and construction joints in concrete structures.

The ridges on both sides of the ribbon give a good grip on the concrete, and high tensile strength and elasticity enable it to withstand shearing. Splicing lengths is done by heating the ends to be joined and holding them together until they bond.



Forms are tied in a central location. Two men tie an 8-foot column form in an average of 5 minutes using Signode steel strapping and 2-piece tool set.

Strapped form is lowered to the floor below over reinforcing rods. Strap placement per Signode formula.

Contractor ties concrete column forms in 5 minutes with Signode steel strapping

Seth E. Giem & Associates, Memphis, Tenn., is an old hand at using Signode steel strapping for tying forms for concrete columns. These pictures were taken during construction of the Bronson Hospital Nurses' Home, Kalamazoo, Mich.

On this job, the forms for each floor are built in a central location. Then the strapping is put on—in five minutes per form by two men, in less than ten minutes by one man. The forms are next lowered into position, the collars put on, the column trued up, and the pouring can begin.

When the concrete is set, each strap is simply snipped, and forms are quickly removed. There are no clamps or yokes to handle or care for. You will find many other uses for steel strapping on a construction job, such as bundling of materials and reinforcing scaffolding.

Signode has developed form designs and strap spacing formulas for a variety of column sizes—can save you a lot of time in getting started right in the time-saving application of steel strapping to your forms. Call the Signode man near you, or write:

Strapping is stripped in moments with Signode cutters. No form clamps to move.

A complete basement form. Note smooth finish, squareness, flatness. There's no bulge.

SIGNODE STEEL STRAPPING CO.

2682 N. Western Ave., Chicago 47, Ill.

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

How Engineers, Contractors "Create" New Land with

Service Station Built Over Running Stream

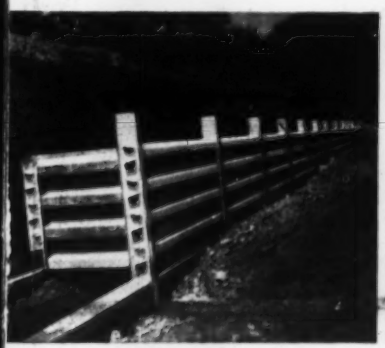
Urban property adjacent to Route 40 in Indiana, had relatively little business value because of a meandering stream. Enclosing the stream in an Armco Corrugated Metal Drainage Structure permitted filling the land to the level of the road. Thus the property became a valuable filling station location. Pictures show the site during installation of the MULTI-PLATE® Pipe-Arch Structure, and the completed service station, ready for business.

Low, wide-bottomed Pipe-Arch shape was specified because of the limited headroom available. Pipe-Arch met both the waterway area and headroom requirements.

Armco Construction

and Owners
Armco Products

As land value increases, so does the need to use it more efficiently. This is one reason why marginal, unusable lands are being changed and improved to gain new uses—and new income. Look how Armco Drainage and Construction Products help.



Slope Leveled for Extra Parking Space

Usable space for a new parking lot in Binghamton, New York, was limited by a slope. But excavating and leveling the slope back to the property line made the entire lot usable. An Armco Bin-Type Retaining Wall was given the job of confining the new, steeper embankment at the property line. Completed view shows how the wall adds to the neat appearance of the job. Armco Walls have won wide acceptance for applications like this—as well as for slope control on highway and railroad right-of-ways.

Soupy Soil, Plus an Armco Drainage System, Equals Firm Airport

Site selected for a new private airport in Ohio was ideally located for industrial business and other private airplane operators. But entrapped water in the subgrade made the area marshy and unstable. To correct this, engineers provided more than 2,000 feet of standard Armco Pipe to handle storm drainage and 15,000 feet of Armco Perforated Pipe for subdrainage. Diameters ranged from 6 inches to 48 inches. The subdrainage system collects unwanted ground water and carries it away, leaving a dry, stable base for the runways.

Variety of Construction Problems Solved With Service-Proved Armco Products

ARMCO STEEL SHEETING provides efficient separation of land and water in this residential area.

A WIDE RANGE of sizes and types of Armco Water Control Gates provides a ready answer to flood control, irrigation and sewage control problems.

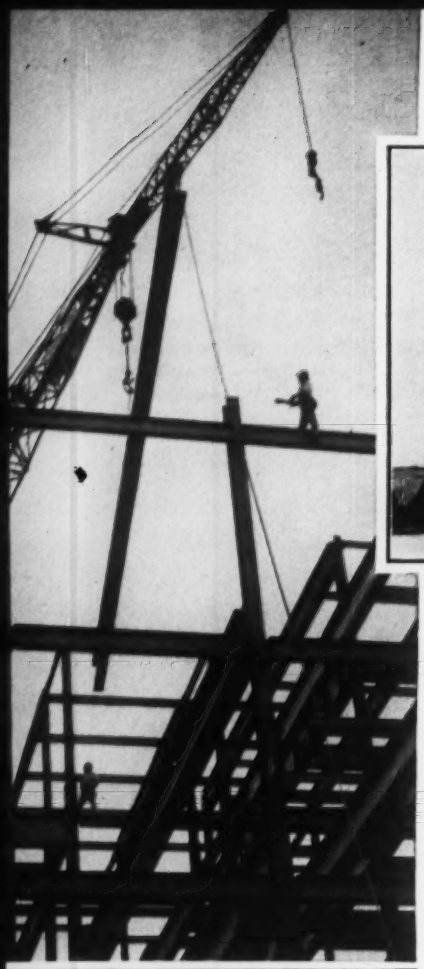
ARMCO HEL-COR® PILE SHELLS are driven for the foundation of an expanding industrial plant erected on unstable tideland property.

Write for Helpful Data

Complete data is yours for the asking. Write us, outlining your drainage or construction problem. Armco Drainage & Metal Products, Inc., 4237 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

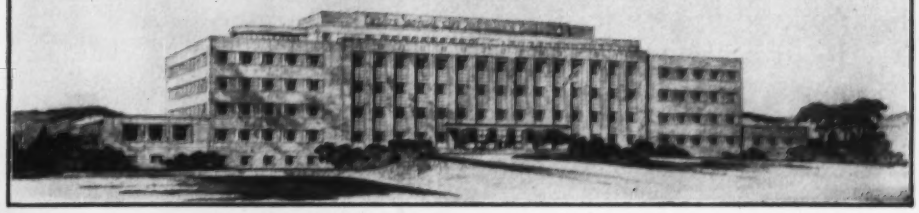
Products

ARMCO®



Structural Steel for

NEW HOME OFFICE BUILDING
State Mutual Life Assurance Company
Worcester, Massachusetts



by AMERICAN BRIDGE

Designed by:
CRAM & FERGUSON, ARCHITECTS & ENGINEERS
BOSTON, MASS.

Contractor:
TURNER CONSTRUCTION COMPANY
BOSTON, MASS.

One of the most interesting of the many office buildings erected by American Bridge is the handsome new home of the State Mutual Life Assurance Company in Worcester, Mass.

Six stories, 180′ x 500′, with basement and penthouse, this imposing 500,000-sq.-ft. structure features a unique executive core in the center with column-free work space surrounding it. Ultramodern in design, it has automatic elevators and moving stairways, and is completely air-conditioned.

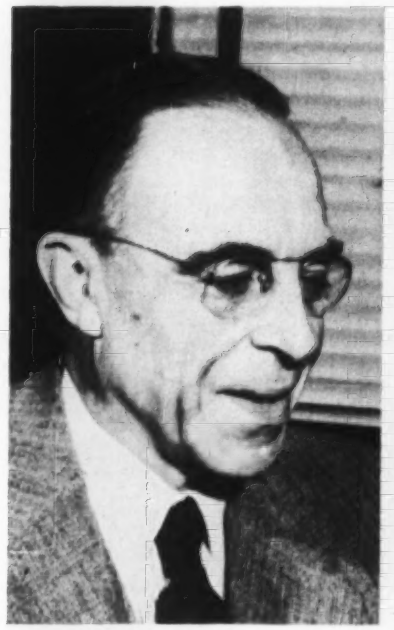
American Bridge fabricated and erected 4,820 tons of structural steel for the framework of this large building which is now ready for occupancy . . . *right on schedule.* Field connections were made with high-tensile and ordinary bolts, and welding.

This new building, while by no means one of our biggest, certainly is typical of all American Bridge jobs . . . *in the quality of field engineering, workmanship and materials that went into it.* You can depend on American Bridge to handle any job with maximum efficiency, economy and speed—anytime, anywhere. For detailed information regarding your requirements, please call the nearest office.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.
Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA • GARY
HOUSTON • LOS ANGELES • MEMPHIS • MINNEAPOLIS • NEW YORK • ORANGE, TEXAS • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

UNITED STATES STEEL



Lester C. Rogers

Fred W. Heldenfels, Jr.

Rogers, Heldenfels Take Over Top AGC Posts

A heavy construction man—Lester C. Rogers, president of Bates & Rogers Construction Co., Chicago—has been elected president of the Associated General Contractors of America for 1957.

Named to fill the post of vice president is Fred W. Heldenfels, Jr., of Heldenfels Brothers, Corpus Christi, Texas.

Both men have been active in the AGC for many years, and Rogers is the son of Walter A. Rogers, who in 1920 served as the second president of the organization.

• **President**—Rogers has been on the AGC Governing Board since 1942, and prior to his election as top man was a member of the Executive Committee. For nine years he was chairman of the Labor Committee and, as such, represented both the construction industry and the association at International Labor organization meetings in Rome and Geneva. He also has served as vice chairman and chairman of the Heavy Construction and Railroad Division of the group.

Rogers was born in Elgin, Ill., was graduated in 1915 from the University of Wisconsin with a B.S. degree in civil engineering. He joined Bates & Rogers right after graduation and, except for a two year period as a field artillery officer with the AEF, has been with the firm ever since.

In 1937 Rogers became president and a director of the construction company. Under his direction the firm has gained distinction in all phases of heavy construction. Many large dams, bridges, tunnels, generating plants, subways, drydocks, and railroad projects are numbered among its achievements.

• **Vice President**—Heldenfels, a native Texan, was graduated in 1933 from Texas A. & M. College with a B.S. degree in civil engineering. Since then, he has been a partner in the firm of Heldenfels Brothers, which was started by his father before World War I. The company's field of operation is principally in highway and heavy construction work.

Heldenfels activities in the AGC have been extensive at both regional and national levels. He served for two years as president and for several years as director of the Texas Highway Branch of the association, and also acted as chairman of the state Executive Council. In the national group, he has been chairman of the Highway Contractors Division, a member of the Legislative, Finance, and Executive committees, the contract Forms and Specifications Committee and the Public Relations Committee.

Harris Named Chief of Federal-Aid Sewerage Plan

U.S. Public Health Service last week filled a key vacancy in its water pollution control branch, naming Robert Harris of Bethesda, Md., as chief of the $50 million a year sewage treatment plant construction program. Harris, who joined PHS in 1948 after a stint as associate chief engineer of the Kentucky State Health Dept., succeeds Curtiss M. Everts, who had returned to his state public health post in Oregon after setting up the new federal aid program last fall.

Also advanced: John T. Barnhill, water pollution branch program officer, to chief of the program aids and reports section. Barnhill joined PHS in 1949 after serving two years with the Boston engineering firm of Metcalf and Eddy.

The appointments were announced by PHS water pollution control chief Gordon McCallum as PHS authorizations for sewage works construction neared the $5.5 million mark. The 83 municipalities whose projects have been approved so far are putting up about $4 of their own for each $1 of federal aid.

Three MIT Professors Form Structural Consulting Firm

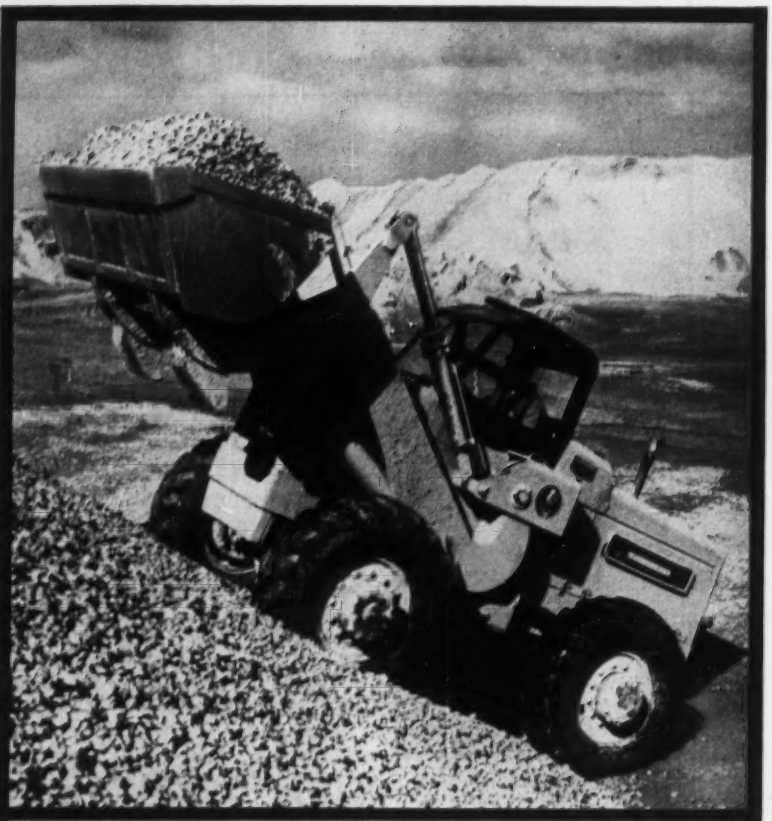
Prof. Howard Simpson, Werner Gumpertz and Frank Heger, Jr., have associated under the name, Simpson, Gumpertz & Heger, to act as consultants in structural engineering. The firm's office is in Cambridge, Mass.

The partners are members of the staff of the Department of Civil Engineering at Massachusetts Institute of Technology. The firm will specialize in construction problems and management, architectural specifications, engineering reports, investigations and appraisals.

Arkansas Bridge Designer Is Engineer of the Year

Neal B. Garver of Little Rock, who supervised the designing of more than 2,000 bridges spanning every major stream in Arkansas, has been named Arkansas Engineer of the Year by the State Society of Professional Engineers. The award had been made only once before, in 1955.

Garver, 80, now in semi-retirement, joined the Arkansas Highway Department as a consultant in 1920, when he was asked to draw a set of standard plans for bridges. The next year he organized the bridge division of the de-



How many yards?

A rubber tired tractor-shovel can do so many jobs, under so many kinds of job conditions that the yardage handled per hour or per day can vary considerably. That's why yardage figures can be so misleading unless all the job factors are taken into consideration.

But of this you can be certain . . . on any given job the new "PAYLOADER" units will deliver more yards per day than any comparable size tractor-shovel . . . and will do so continuously shift after shift.

The knowledge and experience gained in building thousands of wheeled tractor-shovels — more than all others combined — over the past 35 years is your assurance that a "PAYLOADER" is superior in design, engineering and performance. So don't be deceived by "box-car" yardage figures . . . try a "PAYLOADER" . . . on *your* job . . . and you be the judge. Your "PAYLOADER" Distributor will be happy to demonstrate the size you require, up to 2¼ cu. yd. payload capacity. The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Ill.

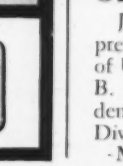
67

PAYLOADER®

MANUFACTURED BY

THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



partment and set out on his bridge designing career.

Garver, who also designed many buildings in Arkansas, including churches, schools and a university medical center, graduated in civil engineering in 1905 from Iowa State College. In 1911 the college gave him a degree in professional engineering, and in 1948 the University of Arkansas conferred an honorary doctor of law degree upon him.

He was the second president of the Mid-South Section of the American Society of Civil Engineers and a past president of the Arkansas Engineers Club.

Joseph A. Courter

Joseph Courter Elected President of the BTEA

Joseph A. Courter has been elected president of the Building Trades Employers' Association of New York City. He had served for three years as vice president before succeeding William B. F. Drew as president.

A graduate of Newark College of Engineering, Courter heads his own firm, Courter & Co. He is president of the Mechanical Contractors Association of New York, Inc. and a former president of the New York State Association of Mechanical Contractors.

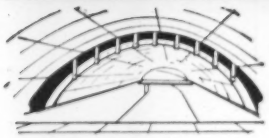
Morava Becomes President Of U. S. Steel Division

John H. Morava has been appointed president of U. S. Steel Supply Division of U. S. Steel Corp. He succeeds Leslie B. Worthington, who was made president of the Columbia-Geneva Steel Division of USS in San Francisco.

Morava received B.S. and M.A. de-

MASONITE

Third bore, Lincoln Tunnel
General Contractor; Mason Johnson, McLean
Foot of Baldwin Ave., Weehawken, N. J.

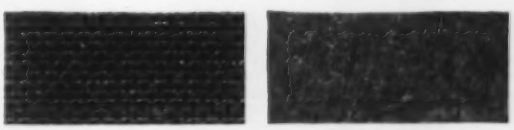


Smooth ceilings for the Lincoln Tunnel

It gets doggone hot and humid in a long bore under a great river. So, you want a formboard that'll withstand heat and moisture...as well as one that leaves a smooth, level concrete surface for the ceiling tiles that go on.

The answer? Masonite® Concrete Form Presdwood®. In the giant third tube of the Lincoln Tunnel between New Jersey and New York City, these tough, grainless panels stood up under pouring after pouring in the semi-continuous operation.

Concrete Form Presdwood offers many other advantages. For a free sample and full information, send the coupon.



There are two sides to *this* story

Screen side to concrete. Cuts hand-rubbing time. Provides ideal bond for painting concrete surfaces.

Smooth side to concrete. For blemish-free, concrete surfaces. Hand rubbing virtually eliminated.

®Masonite Corporation—manufacturer of quality panel products.

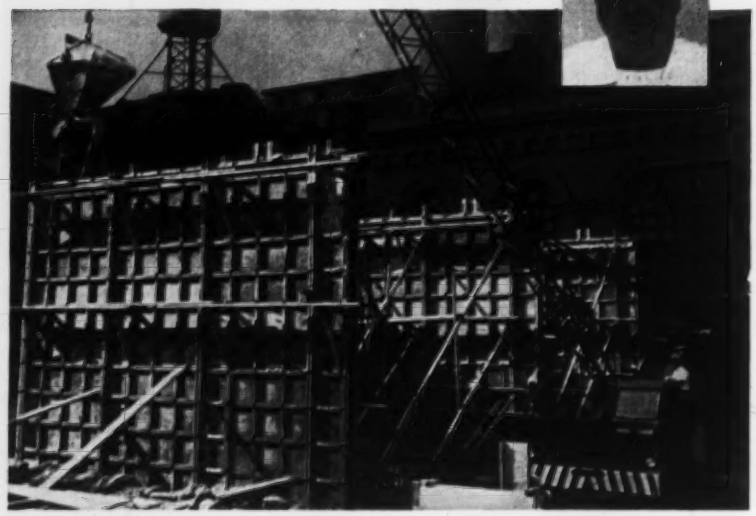
MASONITE® PRODUCTS

MASONITE CORPORATION
Dept. ENR-321, Box 777, Chicago 90, Ill.
Please send me a sample of Concrete Form Presdwood and your booklet on cutting costs.

Name .....
Firm .....
Title .....
Address .....
City ..... *State* .....
Zone ..... *County* .....

"The industry has needed an on-the-job form assembly system like this for a long time."

Lawrence H. Johnston, Form Construction Superintendent; Rosoff Bros., Inc. and Amdor Structures, Inc.



Major Concreting Economies Laid to New Richmond Forming Method

"Everything goes faster—setting the forms, pouring, taking the forms down. No doubt about it, the new Richmond Snap-Ty Form System is the modern way to form and pour."

Mr. Johnston has used this prefabricated panel system on several Rosoff-Amdor projects . . . started as soon as Richmond introduced its new booklet of modular panel forms and made available hardware for putting together prefabricated panels easily—right on the job.

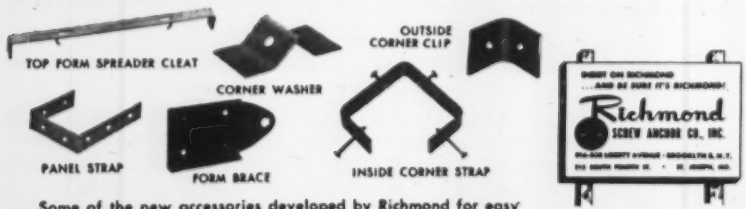
Rosoff-Amdor builds the panels on the job—uses them over and over again. For this job, they stacked them horizontally, used the walers vertically. For walls under 15 feet, they use 3,000-lb. Richmond Snap-Tys; for the high walls, 5,000-lb. Snap-Tys. They pour 26-foot-high walls like these in a single day in one continuous pour.

For erection of light foundation wall forms, Richmond Snap-Tys and accessories give you worthwhile savings all along the line. Head washers of Snap-Tys are made of special-strength steel securely held by a clean, well-formed upset at each end to give positive bearing to the Tyholder. This transmits the full strength of the Snap-Ty to the walers and prevents costly form breaks. Break points are set back from the wall face. This permits clean, easy stripping and prevents spalling of the concrete.

SNAP-TY AND TYHOLDER
2 sizes: 3,000 lbs. and 5,000 lbs. safe load

You, too, can benefit by using this fast, easy method for erecting light foundation walls. See for yourself. Send for your copy of the new Richmond Snap-Ty Form Book containing complete diagrams and forming data. It's free for the asking.

Richmond does not make, rent or sell forms. Richmond sells form-tys and accessories only. The free 20-page booklet tells you how to make and assemble your own forms that can be used over and over. Send for it. Ask, too, for your copy of the new Richmond Handbook, which describes the full line of Richmond-engineered tying devices and accessories. Write to: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 South Fourth St., Saint Joseph, Mo.



Some of the new accessories developed by Richmond for easy on-the-job assembly of prefabricated modular form panels.

gress in civil engineering from Yale University. He started with USS at the firm's South Works Plant in Chicago in 1930 and was alloy mill foreman there before moving into the sales organization. In the Chicago headquarters office he served in various capacities before becoming manager of sales of the Chicago district office in 1955, the position he leaves to take up his new post.

Careers . . .

Government

George Thormyer, who was named assistant director of the Ohio Highway Department early in February, has been appointed acting director until **Charles M. Noble** has reached legal resident status. Noble, who recently retired as chief engineer of the New Jersey Turnpike Authority, will be a consultant to the highway department until he becomes highway director next year. In another shift, **Ralph J. Lehman,** chief engineer for the Ohio Turnpike Commission, will head up a special task force on the interstate highway system.

Col. Edward H. Dillon, Ft Peck, Mont. district area engineer for the Corps of Engineers since Aug. 1954, will become post engineer at Ft Knox, Ky., in mid-April.

Thomas M. Burnett of Chattanooga has been appointed division engineer in charge of the Chattanooga Division of the Tennessee State Highway Department.

Business

Wentworth R. Lovering of Eureka, Calif., has been named district engineer at Sacramento for the Asphalt Institute, and **Claude F. Skidmore** of Toledo has been designated district engineer for the Institute in Michigan and Northern Indiana.

Guy V. Sperry has been named vice president and chief engineer of Utah Construction Co. of San Francisco, and **John M. Horrigan** is new secretary of the company. Sperry, chief engineer in charge of heavy construction projects since 1952, joined the firm in 1942 after a long career with the Bureau of Reclamation.

Burl A. Sawyers, commissioner, **Vincent J. Johnkoski,** administrative assistant, and **William T. Brice,** executive secretary and director of public relations for the West Virginia State Road Commission have submitted their resignations from the posts. Successors will be named by newly-elected Gov. Cecil H. Underwood.

Here's the Inside Story of Why You Get Lasting Accuracy, Eliminate Costly Repairs with . . .

Brunson's Patented

DUSTPROOF BALL BEARING CONSTRUCTION!

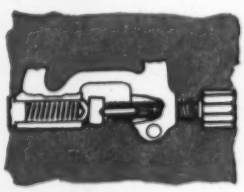
Engineer's Transit Model 50

Think surveying instruments are all pretty much alike? The "inside story" shows you why Brunson instruments are different—why they assure lasting accuracy and minimum maintenance unrivalled by any other instruments. The big difference is dustproof ball bearing construction!

Located in the spindle and telescope axis, Brunson ball bearings are permanently lubricated by an all-temperature grease and sealed against dust and moisture. Preloaded and accurate to 5-millionths of an inch, these ball bearings provide highest possible instrument accuracy. With dust sealed out and lubricant sealed in, wear is practically eliminated by the smooth ball bearing action. That's why your Brunson instrument stays accurate and operable year-in-and-year-out, where others fail. You save hundreds of hours in on-work time, avoid costly errors, slash routine repair and maintenance expense to a level undreamed of in the past.

You pay no more for Brunson's exclusive ball bearing construction. Mail coupon today for the complete "inside story".

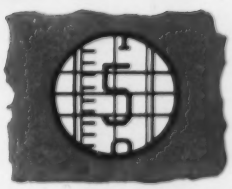
You Get These Big Advantages, Too!



Wobble Pin in Tangent Screw Point—Enables your Brunson instrument to stay "on point" by eliminating strain and wear points that cause slippage.

Long and Short Shots in Collimation—Long and short shots are all in exactly the same straight line. No attachments needed for sharp focus at even 42 inches.

Sturdy, Heat Treated Cast Truss Standard—Supports over 200 pounds without bending or warping. Strong construction, throughout, withstands even the roughest handling.



Exceptionally Accurate Stadia Readings—Provided by coated lens with extra-sharp focus and strong, "no sag," Fiberglas cross wires. Wide field of view.

BRUNSON

The New Standard of Excellence

Distributed Exclusively By

BRUNING

Offices in 37 Cities of the U.S. and Canada

(In Canada: write 105 Church St., Toronto 1, Ont.)

Charles Bruning Company, Inc., Dept. 34MM
4700 Montrose Ave., Chicago 41, Ill.

Please send me information on Brunson Surveying instruments.

Name_____ Title_____

Company_____

Address_____

City_____ County_____ State_____

Fenestra Galvanized-Bonderized Industrial Steel Windows ready to replace the old monitor sash on Caterpillar Tractor Co. Building HH, Peoria, Illinois.

Shown here are A. F. Wiedeman, Caterpillar Construction Engineer, and C. Y. Chapman, Construction Superintendent, examining the Fenestra Bend Bar Test that demonstrates the stronger bond of the Fenestra Galvanized-Bonderized finish. Mr. Chapman, holding the Fenestra test bar, calls it "one of the best galvanizing jobs I've ever seen." Your Fenestra Representative will be glad to show you this same test. It will prove the difference between the Fenestra finish and ordinary galvanizing. Ask to see it, today.

The Fenestra Galvanized-Bonderized finish is also available on the complete line of Fenestra Intermediate Steel Windows for schools, office buildings and other fine structures.

Fenestra
FACTORY DESIGN NEWS

Caterpillar Tractor Co.,
Peoria, Illinois, chooses Fenestra
Galvanized-Bonderized Industrial Steel
Windows because they estimate they will

SAVE WINDOW PAINTING COSTS FOR 20 YEARS!

Maintaining nearly five miles of monitor windows on the roofs of Caterpillar Building HH and the foundry at Peoria, Illinois, was an expensive and time-consuming problem. With the ordinary sash originally installed in these buildings, a complete paint job was required every four years. Even with this kind of care, the fixed sash in these monitors needed extensive reglazing and rehabilitation a few years ago.

Under the direction of W. H. Zurhorst, Manager, Plant Engineering, a plan was developed by C. Y. Chapman, Construction Superintendent, and A. F. Wiedeman, Construction Engineer, to completely replace the sash with Fenestra® Galvanized-Bonderized Industrial Steel Windows. Based on careful tests they estimate that these windows will require *no maintenance painting for at least 20 years.* The saving in labor and materials will pay for the replacement.

One of the reasons Caterpillar chose Fenestra windows was the Fenestra Galvanized-Bonderized finish. Hot-Dip Galvanizing is recognized as the best protective coating for steel. The zinc surface is actually alloyed with the steel. Fenestra's galvanizing process is completely controlled for a smooth, uniform coating. It's done in Fenestra's specially designed plant. Bonderizing, after galvanizing, gives added protection and an attractive silver-grey finish.

If you are planning a new industrial building or if you are trying to solve an expensive maintenance problem with existing windows, get the facts about Fenestra Galvanized-Bonderized Industrial Steel Windows. Call your local Fenestra Representative—listed in the Yellow Pages—or mail the coupon below.

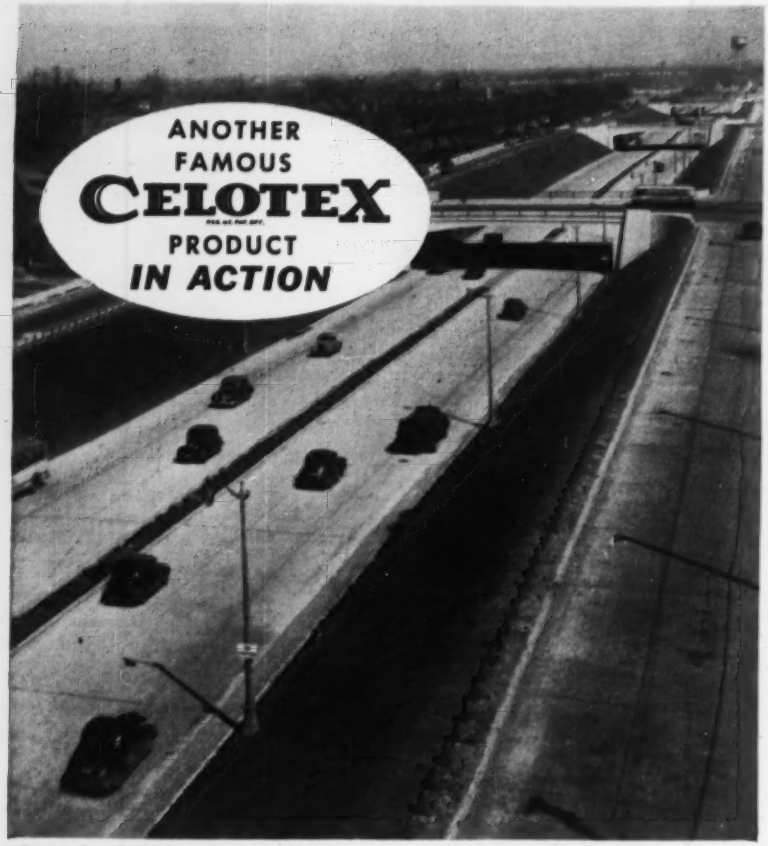
Fenestra
INCORPORATED

Galvanized-Bonderized
INDUSTRIAL
STEEL WINDOWS

Your Single Source of Supply for
DOORS • WINDOWS • BUILDING PANELS

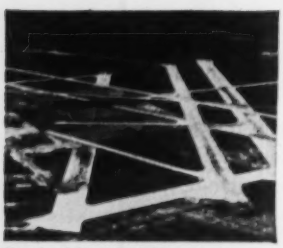
Fenestra Incorporated
ER-3, 2286 East Grand Boulevard
Detroit 11, Michigan
Please send me complete information on Fenestra Galvanized-Bonderized Industrial Steel Windows.

NAME_____
FIRM_____
ADDRESS_____
CITY_____ STATE_____

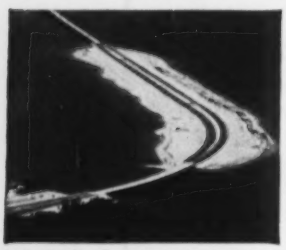


Detroit Express Highway, typical use of Flexcell Joint Filler "wherever concrete meets concrete"

BEST LOW COST PERFORMANCE!



Cleveland Municipal Airport, where 2½ million people landed or took off last year on runways protected by Flexcell Joint Filler.



Rickenbacker Causeway between Miami, Florida, and Biscayne Key. Flexcell Joint Filler contributes to smooth riding and easy maintenance.

FLEXCELL

REG. U.S. PAT. OFF.

EXPANSION JOINT FILLER

1st. Choice Across America!

Men meeting today's road-building challenge know an inch can be a chasm in concrete highway construction. They like the better combination of performance characteristics you get with Flexcell Joint Filler. You'll like its low installation and maintenance cost, too.

COMPRESSIBLE • NON-EXTRUDING • RESILIENT

Flexcell Joint Filler bonds firmly to concrete, compresses without extruding. Re-expands to keep joints filled, preventing intrusion of dirt and stones. Uniform asphalt impregnation, 35% by weight minimum. Unaffected by temperature extremes. Tough, rigid, light in weight. Easy to fabricate and install. Delivered to your specifications.

Write for Complete Data Today • No Obligation

THE CELOTEX CORPORATION

120 South La Salle Street • Chicago 3, Illinois

Obituaries

Cornelius E. Elmendorf, 72, retired civil engineer since 1954, died Jan. 24 in Rochester, New York. A Union College graduate, he had been in charge of construction of the Barge Canal Terminal in Rochester. From 1925 to 1943 he was a consultant engineer and served as vice president of William S. Lozier Co.

Earl B. Lockridge, 71, of Indianapolis, former chief engineer of the Indiana Highway Department, died Jan. 27 in Chicago. He was an Army Engineer in World War I and held the rank of colonel in the Corps of Engineers during World War II. After retiring from the road department in 1953 he served as engineer for the Asphalt Institute at College Park, Md.

Allen B. Humason, 76, retired civil engineer, died Jan. 25 in Seattle. He began his career as construction engineer for the Great Northern Railway in Spokane and was Grant County engineer at Ephrata, Wash. He retired in 1945 after having been employed by the Civil Aeronautics Administration.

Howard W. Holmes, Montana State Highway Engineer from 1941 to 1948, died Jan. 19 in Pacific Grove, Calif.

Hubert L. Gerstnecker, 66, one of the U.S. engineers hired by the Soviet government to supervise construction of Dnieper Dam, died Jan. 23 in Cleveland. He was on the engineering staff of McKee Co., Cleveland, and had been plant engineer for White House Concrete Co. In the heavy construction field, he had done supervisory and consulting work on the Detroit-Superior and Lorain-Carnegie bridges and Union Terminal.

R. Norris White, 69, treasurer and director of W. D. Haddock Construction Co., and a director of Hadco, Inc., both of Wilmington, died Feb. 18. He was an early sponsor of Allied Construction Industries of Delaware.

Samuel H. Coxe, a construction engineer with the Army Engineers at Philadelphia, died Feb. 16 at Upper Darby, Pa. Coxe previously served with the Army Engineers in the Canal Zone, Alaska and France.

Harold Bruner Braxton, 56, Clarksville, Indiana, civil engineer, died in Louisville, Ky., Feb. 21. Braxton, had for years, been active in highway work in both Indiana and Kentucky.

NEW!

Blaw-Knox Grating and Tread Catalog

This brand-new, comprehensive catalog presents more useful application information than ever before. Complete descriptive information such as spacings, weights, panel widths and bearing bar surfaces are included for each type of grating.

In addition, a wealth of useful data such as tables of safe loads, fastening methods, and model specifications are included.

If grating application and installation is part of your responsibility, you should have a copy of this useful publication. Send for your copy today. No obligation, of course.

BLAW-KNOX COMPANY

Blaw-Knox Equipment Division

1113 Blaw-Knox Building • 300 Sixth Avenue • Pittsburgh 22, Pennsylvania

GRATING APPLICATIONS: floors • platforms • walkways • catwalks • stair treads • fan guards • shelving • and many other uses, both outdoors and indoors, for versatile steel grating

BLAW-KNOX EQUIPMENT DIVISION
1113 Blaw-Knox Building • 300 Sixth Avenue • Pittsburgh 22, Pennsylvania

Gentlemen: Please send me a copy of New Blaw-Knox Grating Catalog 2527.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

CLYDE R. HARVILL,
Superintendent,
San Jacinto Water System,
City of Houston
Utilities Dept.

The Houston Water Purification Plant was one of the first plants to use rubber-seated butterfly valves in filter service. Freese, Nichols and Turner, Consulting Engineers, chose R-S Rubber-Seated Butterfly Valves over conventional gate valves for all low-pressure service because their compact design permitted close coupling of pipe. Result: a substantial saving in space, and a direct, in-place cash saving of $124,000.

Houston, Texas, Reports: COMPLETELY SATISFIED WITH R-S BUTTERFLY VALVE OPERATION

When the Houston Purification Plant went into operation in 1954, 65 R-S Rubber-Seated Butterfly Valves were used to equip the entire low pressure system. Today, Mr. Harvill reports that these valves are giving good service, and that he is fully satisfied with their performance and minimum maintenance requirements during their first years of operation.

R-S Rubber-Seated Butterfly Valves are easy to operate, and will provide 100% effective shut-off with a 125-pound pressure drop. Wedging action of the vane against the tough, flexible rubber seat assures positive closure, even around shaft bosses. The special composition of rubber and other materials gives long wear and resistance to the abrasive action of material flow.

To obtain complete information on the full SMS line – Butterfly Valves, Rotovalves and Ball Valves – see our local representative, or write S. Morgan Smith Company, York, Penna.

S. MORGAN SMITH HYDRODYNAMICS

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

1

Rotovalves • Ball Valves • R-S Butterfly Valves • Free-Discharge Valves • Liquid Heaters • Pumps • Hydraulic Turbines & Accessories

Law Requires an Owner To Mitigate His Damages

If a construction contract contains no completion date, the law implies a reasonable time for completion. If the contract is breached because of delayed performance, damages are usually limited in scope to what the parties might have contemplated. At the same time, the owner, damaged by the breach, is required to take reasonable steps to mitigate his damages. These principles are illustrated in the following New Jersey case.

On Aug. 25, 1952, William F. McGraw entered into a contract with Johnson, a contractor, for construction of a dwelling on McGraw's lot in Park Ridge, N. J., for $15,300. The agreement did not provide for a completion date in view of the fact that McGraw first had to procure a Veterans' Administration guaranteed mortgage loan. The loan was granted in January, 1953. Johnson began work on Feb. 10 and told McGraw that construction would take about four months. There was further talk about the completion date as the work progressed. Johnson first promised the house for Aug. 1, and finally for Sept. 1.

McGraw claimed that he had informed Johnson that he would have to give 30 days' notice of intention to vacate their apartment, and Johnson assured him he had nothing to worry about as the house would be finished by Sept. 1.

On Aug. 15, the house was about 99½% completed, there remaining some minor items of work to be done which would have cost only $57 to perform, plus two items of plumbing work: installation of a water meter and connection of a toilet bowl, which would have cost about $10 to perform. All the work that remained to be done could have been performed in a day.

The building was not completed until December, and McGraw took possession on Dec. 10.

He brought an action against the general contractor and the plumbing contractor to recover damages for delayed performance, the action against the plumbing contractor being based on willful interference with the completion of the contract.

The plumbing work was done before the owner took possession so that the cost of completing the construction work amounted to only $57. The owners sought to recover, in addition to the $57, the amount they expended for rent of a room in a local hotel and for meals for the period from Oct. 15 to Dec. 10.

The plumbing contractor had refused to complete the work because there was due him from the general contractor for the work he had performed the sum of $1,000, which the general contractor had refused to pay him because the owner under the terms of the contract owed the general contractor $4,400. The owner claimed he was unable to make this payment because the plumbing contractor had filed a mechanic's lien and the bank refused to make any payments on account of the mortgage until the lien was removed. At the trial, the evidence showed that the owner had more than $4,400 in his personal bank account and could have paid the contractor out of this account. The trial court granted the owner judgment for $57 and dismissed the complaint against the plumbing contractor. This judgment was affirmed on appeal.[1]

The appellate court pointed out that the contract did not specify any date for completion of the work. "It is settled law that where no time is fixed for the performance of a covenant, the law implies it shall be done within a reasonable time. Wemple v. B. F. Goodrich Co., 126 N.J.L. 465, 469, 19 A. 2d 692. Equally well established is the general rule that damages recoverable for breach of contract must be such as might reasonably be supposed to have been within the contemplation of the parties when the contract was made. Hadley v. Baxendale, 9 Ex. 341 (1854); Van Dusen Aircraft Supplies, Inc. v. Terminal Construction Corp., 3 N.J. 321, 329, 70 A. 2d 65 (1949).

"We consider that the expenditures for which plaintiffs seek recovery cannot reasonably be said to have been within the contemplation of the parties when the construction contract was signed back in August, 1952, and they are therefore not recoverable."

The appellate court further stated: "In the second place, assuming Johnson did breach the contract, the law requires that a party who has been injured by the breach must make a reasonable effort to mitigate his damages. Frank Stamato & Co. v. Borough of Lodi, 4 N.J. 14, 21, 71 A. 2d 336 (1950). Plaintiffs chose neither to attend to the incidentals themselves, at a cost of no more than $67, nor pay promptly the $4,400 then owed and which would have allowed the builder to pay the plumber and have the work finished. Their explanation is that Johnson kept promising from week to week to do the work, but this does not

Why IRONITE® Waterproofing will solve your most difficult water leakage problem

"Ironite" Waterproofing is an extremely fine iron powder which can be mixed with water and applied with a brush. The iron particles are carried in suspension and thus work their way *immediately* into any and all cavities in concrete, brick, stone and other porous masonry building materials. This makes it possible to "flow it" into the most inaccessible spots.

Bulletin No. 701 tells how and why Ironite Waterproofing is used and explains how the iron particles thus oxidize and expand with such force as to form an INDESTRUCTIBLE UNION with the porous surfaces. This *structural integration* results in a continuous structural mass from which the water resistant compound cannot be separated. It can be successfully applied to the Inside Surface of below grade masonry!

Water, moisture and dampness problems involved in foundations, basements, catch basins, boiler pits, concrete bridges, swimming pools, tunnels, molasses tanks, hot water tanks, sewage disposal plants, etc. are easily solved. Leading architects, contractors and engineers have specified Ironite Waterproofing for 50 years:

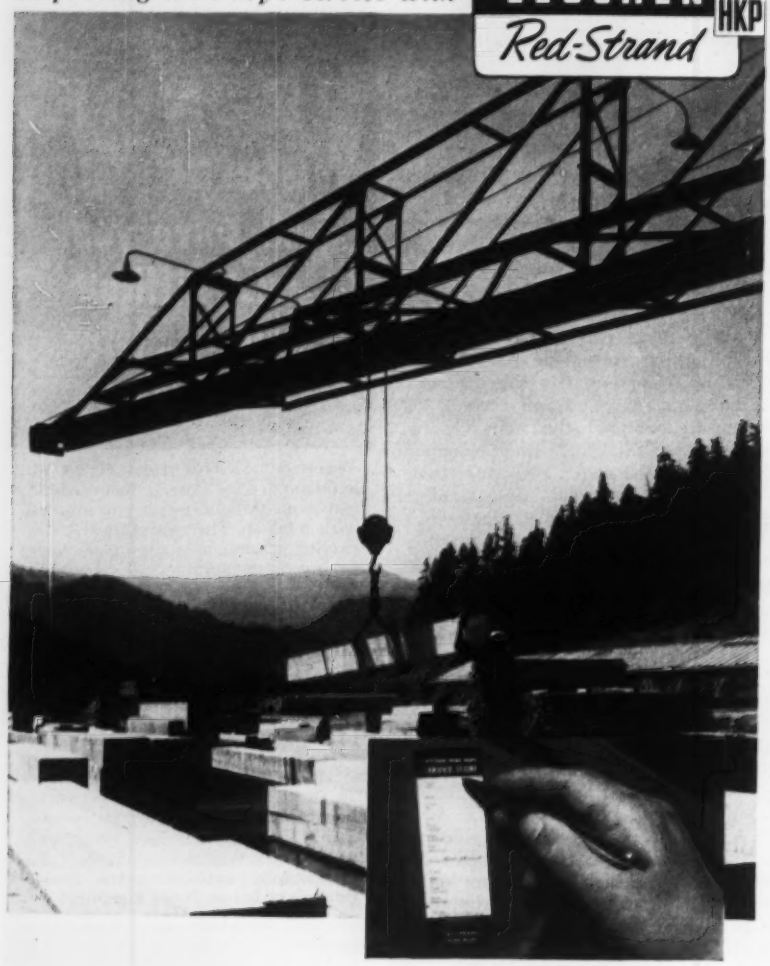
- **. . . Because it is a metallic water resistant compound.**
- **. . . Because it is not merely an outer coating.**
- **. . . Because it cannot scale, blister, crack or peal.**
- **. . . Because removal is impossible without the destruction of the underlying surface.**
- **. . . Because IRONITE Waterproofing has proved its ability to stand up indefinitely in some of the world's most famous buidings.**

For further information write for Bulletin No. 701, IRONITE COMPANY, 208 South LaSalle Street, Chicago 4, Ill.

IRONITE COMPANY

® Registered Trademark

Improving wire rope service with **LESCHEN** *Red-Strand* HKP



How much can you save with Leschen wire rope service?

Wire rope costs can be reduced substantially—10%, 20% or more—by using the right rope type, construction and brand for every job.

How can you tell if you are using the right rope? How much can you save? There's a simple way to find out. You can obtain accurate, on-the-job performance data by using Leschen's Service-Score Sticker System. You'll prove to yourself which ropes work best. And when you see the score, you'll use more Red-Strand wire rope—because Leschen quality and Leschen engineering service can save you money.

Service-Score Stickers are available from any Leschen field man or distributor. Just ask, or write Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

HKP LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

seem a reasonable basis for allowing a substantial damage claim to accumulate when the remedy of self-help was so readily available. Plaintiffs chose, instead, to allow almost four months to pass, while their furniture lay about their new home and the key to the place remained in their pocket."

The case against the plumbing contractor was dismissed since the plumbing work had been substantially completed. The fact that the plumber refused to proceed with the work because he had not been paid the $1,000 that was due him did not constitute malicious interference with the work.

(1) McGraw v. Johnson, 126 A. 2d 203, Superior Court of New Jersey, Appellate Division, October 24, 1956.

Acceptance of Building Not a Waiver of Defects

Under some circumstances courts are reluctant to invoke the doctrine that an owner's acceptance of a contractor's work constitutes a waiver of subsequent claims of defective workmanship.

Such a case occurred in Louisiana, where the purchaser of a building, which was to be erected in accordance with certain plans and specifications, sold the house that he was living in and began the occupancy of the new building before it was completed. The building when completed had defects and the owner brought an action against the builder to recover the cost of remedying the defects. The builder contended that the owner, by taking possession of and occupying the building, had waived its right to damages for defects in the work. The trial court granted the owner judgment which was affirmed on appeal.[1]

The appellate court stated: "The doctrine of waiver or estoppel contravenes the legal rights of the person sought to be estopped, and in some instances stays the operation of the usual proceedings in the adjustment of rights of individuals and for that reason should, in every instance, be applied with great care and caution. Our courts and other jurisdictions universally hold that this doctrine should be applied only in exceptional cases where its application is necessary to effectuate justice or prevent injustice, and should not be applied where it will serve as an instrument of, or operate as, a fraud, be against good conscience, work injustice or accomplish a wrong. Gonsoulin v. Equitable Life Assurance Society of the United States, 152 La. 865, 94 So. 424; C. J., Vol. 31, p. 242 et seq.; 42 C. J. S., p. 380.

"The promotion and enforcement of fair dealing and the prevention of

undue advantage are equally involved in the application of the equitable doctrine of waiver or estoppel, and pleas of this doctrine can be of no avail to the party urging same unless he has been clearly misled to his detriment or injury by the actions or conduct of the party against whom the plea is urged. In re Clover Ridge Planting & Mfg. Co., 178 La. 302, 151 So. 212.

"In the case at bar the record fails to disclose any act or conduct on the part of the plaintiff (purchaser) which would warrant the application of this doctrine as urged by the defendant (builder)."

(1) Breaux v. Laird, 88 So. 2d 33, Supreme Court of Louisiana, March 26, 1956.

Liability for Defective Plans and Supervision

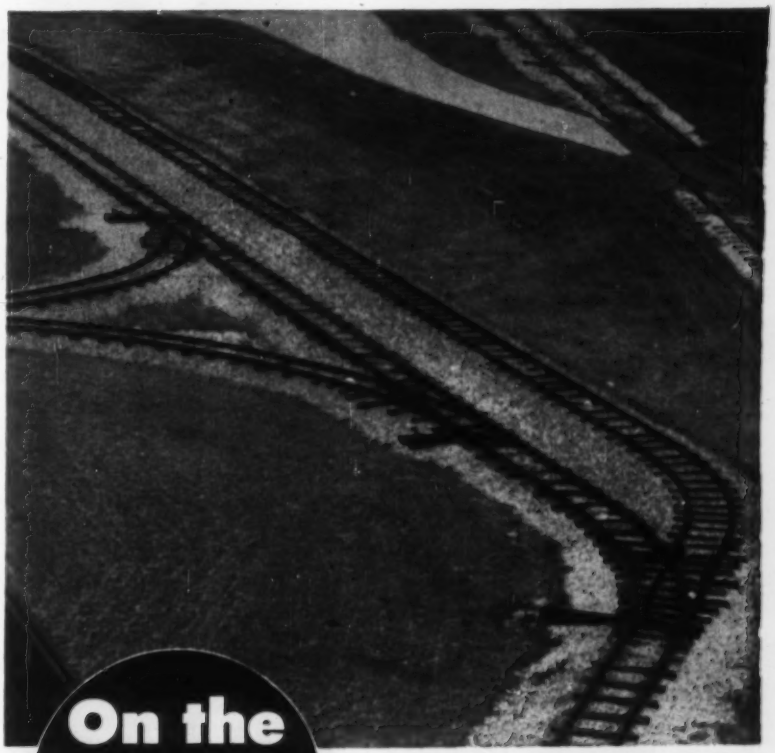
It is well settled law that where a person holds himself out as specially qualified to perform work of a particular character, he impliedly warrants that the work he undertakes to perform will be reasonably fit for its intended use. Where an architect or engineer furnishes plans and specifications that the contractor is to follow in the performance of a construction contract, he impliedly warrants their sufficiency for their intended use.[1]

The same principle holds true with respect to supervision. In one case,[2] for example, an architect was held liable for defective plastering work done in the erection of a building under his supervision, where he failed to discover and condemn the defective work.

(1) Hill v. Polar Pantries, 64 S.E. 2d 855, 219 S.C. 263.
(2) Avent v. Proffitt, 109 S.C. 48, 95 S.E. 134.

Defective Performance And Measure of Damages

The measure of damages for defective performance of a construction contract is "the sum required at the time the house was received to make it conform to the requirements of the contract. The effect of a building contract is to make the contract price the measure of the value of the work as done according to the terms. Moreford v. Ambrose, 3 J. J. Marsh, 688, 26 Ky. 688. That is the true measure of recovery by the contractor less the damage sustained by a failure to perform the contract, as by not completing it or doing defective work. Vincennes Bridge Co. v. Walker, 181 Ky. 651, 205 S. W. 778; Cassinelli v. Stacy, 238 Ky. 827, 38 S. W. 2d 980. The usual and often approved measure of the owner's damages where there has been a failure of substantial performance of the contract, as distinguished from de-



On the Right Track

With Industrial Track Work by West Virginia!

Keeping production on the right track is no problem when you call upon the field engineering and production facilities of West Virginia.

Fifty years of experience plus a keen desire to serve you according to your needs are yours for the asking.

50 YEARS OF SERVICE

Call, wire or write:

WEST VIRGINIA WORKS
CONNORS STEEL DIVISION

HKP H. K. PORTER COMPANY, INC.
P. O. BOX 311 HUNTINGTON, W. VA.

Which QUAKER HOSE do you need today... to cut costs tomorrow?

Rugged, non-twisting AIR HOSE?

Though lightweight for easy handling, this hose won't snake or twist under pressure. It takes dragging . . . resists oil damage . . . withstands cracking at temperatures as low as 20°F. Tough Neoprene cover withstands all weather conditions.

Easy-to-handle WATER HOSE?

This all-purpose water hose is long on wear and value. Easy to handle, it has a black, high-grade rubber cover that resists sun, weather, cracking and peeling. Black, non-porous tube.

Strong, durable SUCTION HOSE?

Here's a rugged, long-lasting hose for conducting water under pressure or suction. It resists kinking and crushing and has good sun, weather and abrasive-resistant qualities. Tube resists action of water containing light concentrations of alkalies, acids, grit and sand.

THESE are but a few of the many types of air, water and suction hose your Quaker-Quaker Pioneer distributor has on hand and ready to go. Call him—whatever your needs. For free brochures, write: *H. K. Porter Company, Inc., Quaker Rubber Division, Phila. 24, Pa., or Quaker Pioneer Rubber Division, Pittsburg, Calif.*

HKP QUAKER RUBBER DIVISION
QUAKER PIONEER RUBBER DIVISION
H. K. PORTER COMPANY, INC.

fects that are remedial at a reasonable cost without doing the work over, is the difference between the value of the building as constructed and its value had it been constructed according to the contract. Staton Springs Park Co. v. Keesee, 217 Ky. 329, 289 S. W. 292; Hoskins v. Williamson, 228 Ky. 395, 15 S.W. 2d 342. This was expressed in Ward v. Qualls, 229 Ky. 662, 17 S. W. 2d 739, as being the difference between the value of the house that the owner got and the house he should have had."[1]

(1) Totten v. Stewart, 286 S.W. 2d 539, Court of Appeals of Kentucky, Oct. 7, 1955.

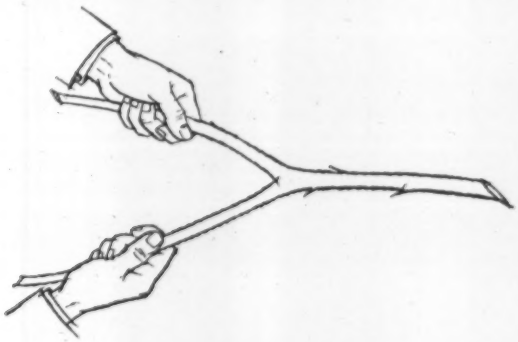
Subcontractor Not Liable For Grading at Job Site

An Ohio court has held that a subcontractor is not required to inspect a job site before contracting to work on it and that he does not agree, by entering into the contract, to do preliminary work, such as grading, that may be necessary before he can start work.

The case arose after a mason contractor had agreed, in writing, with the general contractor to install footings and a concrete floor in a garage that the general contractor had agreed to build. The work was to be done in accordance with certain plans and specifications. At the time the subcontract was entered into, neither party knew that the surface of the ground where the work was to be done was very uneven so that the work described in the contract could not be done until a fill was made in the rear of the site where the work was to be done. When the mason contractor discovered the conditions of the surface of the land and that the work called for by the contract could not be done until the fill had been made, he refused to proceed with the work. The general contractor brought an action to recover damages for breach of contract and obtained a recovery which judgment was reversed on appeal and the action dismissed.[1]

The mason contractor, at the trial, testified that before entering into the contract he had asked the general contractor if the land at the site of the work was flat and the general contractor had told him that the ground was perfectly flat. The mason contractor also testified that had not the prime contractor given him this erroneous information, he would have examined the site of the work to determine the conditions that would be encountered in performing the work. The general contractor denied that it had made any such statement. The appellate court held that such testimony was not ma-

***DODGE REPORTS** point out new construction business the way old divining rods were supposed to find water. So don't trust to luck . . .*



Write for a better way to turn up new construction business

There's no divining rod guesswork in the way Dodge Reports give you a head start on finding new construction business — it's all facts! So, if you want to know where you can find live, active prospects for your product or service, just read, then mail this coupon today.

TO: **DODGE REPORTS**, 119 WEST 40th STREET, DEPT. 101, NEW YORK 18, N. Y.

Yes! I'd like to pin-point my prospects by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area and type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building ☐ **House Construction** ☐ **Engineering (Heavy Construction)** ☐

in the Following Area: _____

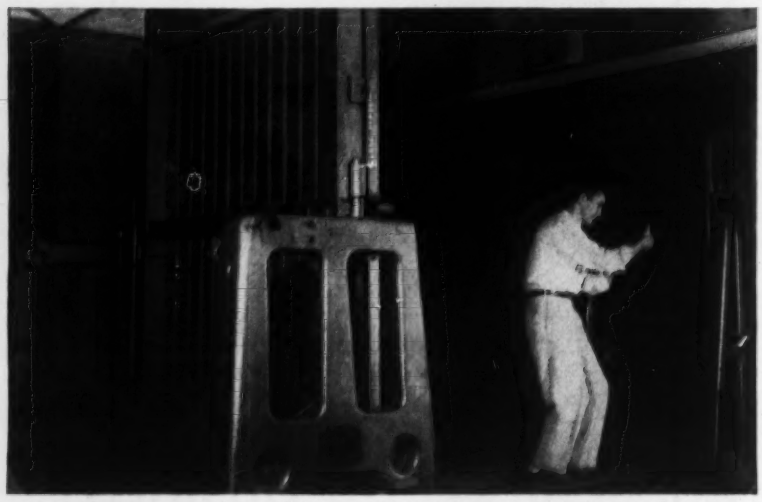
NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Dodge Reports
For Timed Selling to the Construction Industry

DRAFTING TRENDS



A good cameraman is one key to making high quality cloth reproductions.

Cloth reproductions safeguard originals, save drafting time

Many priceless original drawings are subjected to constant punishment. Corners become dog-eared (from filing and handling) and base stock is abused through repeated erasures when elements must be redrawn. In addition, drawings are prematurely aged and discolored as they go through a reproduction machine time after time.

An increasing number of plants are turning to reproductions on durable cloth stock to protect original drawings. The cloth repro is actually a "duplicate original." It can be repeatedly erased, corrected, intensified, redrawn, used for further printmaking. Negatives can be assembled with sections from other drawings. Expensive original drawings can thus be permanently and safely stored.

How photography improves worn original drawings

Since one method of producing a cloth reproduction is via photography, good camera work improves original drawings in several ways. Weak, fuzzy lines are intensified. Differences in strength of lines are often equalized. Faded or weak areas can be strengthened.

Even *after* an original drawing has been photographed, it can still be improved. A good retoucher can bring back parts of the original drawing. Background smudges or tape marks can be blocked out to give good, clear, clean prints.

By using photographic techniques, cloth repros can be *better than the original.*

Cloth repros simplify enlarging, reducing

Photographic enlargement or reduction to scale eliminates much routine work. By turning details over to the camera and an experienced staff, draftsmen are released for more important layout and design work. Often in a matter of one or two days, you can have a drawing enlarged or reduced to the desired size on a cloth base *without losing valuable drafting time.*

More information on cloth reproductions and a sample print are available from the Reader Service Division of the Frederick Post Company, 3658 N. Avondale, Chicago 18, Illinois.

POST

SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

terial since the contract was not ambiguous and provided only for the construction of the footings and floor and did not contain the slightest suggestion that the mason contractor would have to grade the site of the work. The appellate court held that the mason contractor was under no legal obligation to inspect the site of the work before entering into the contract in question.

(1) Ferguson v. Sharkey Const. Co., 137 N.E. 2d 525, Court of Appeals of Ohio, October 17, 1956.

Court Allowed Damages For Defects in Work

In a Louisiana case,[1] the court held that where the owner derived a substantial benefit from the work done by a roofing contractor, but where parts of the work were improperly done, the contractor was entitled to recover the contract price less the cost of remedying defects in the work.

The court also held that the owner could deduct from any sums due the contractor, in addition to the cost of remedying the defects, any expense he was put to by reason of liens filed against the property or the amount of any claims made against the owner for having furnished labor and materials in the performance of the work.

In most jurisdictions, a contractor cannot recover for work performed under a construction contract unless he has substantially performed the contract.

(1) Ebert v. Chambers, 87 So. 2d 613, Court of Appeals of Louisiana.

Architects and Engineers Liable for Defective Plans

Architects, engineers and other professionals are required to exercise reasonable care and skill in the performance of their work. Failure to do so exposes them to liability for damages.

In Georgia, for instance, an architect sued to recover a balance due for preparing plans and specifications for a housing project. The housing authority for which the work was done counterclaimed, asserting that the footings and foundations of the buildings as designed by the architect were not suitable and that the housing authority was put to considerable expense in remedying defects in the work resulting from the faulty plans and specifications. The architect obtained a judgment at the trial but this judgment was reversed on appeal.[1]

The appellate court stated: "The law imposes on persons performing architectural, engineering, and other professional and skilled services the ob-

high-speed freeways start quicker . . .
are completed sooner with

REINFORCED CONCRETE

From coast to coast, highway engineers are finding that reinforced concrete bridges start sooner and progress faster because all necessary materials and labor are readily available from local sources. Structures of reinforced concrete can save months of delay.

Furthermore, reinforced concrete possesses the flexibility necessary to meet the structural requirements of any heavy, congested traffic problems. You can design multiple overpass bridges with bold, graceful lines and soaring curves. Structures built with reinforced concrete are rugged . . . highly resistant to wind, shock, and quake. They are lower in first cost and require less maintenance.

On your next bridge or overpass, design for rugged beauty plus economy . . . design for REINFORCED CONCRETE.

A southerly view of a recently completed section of the Harbor Freeway, U. S. Highway 6, Los Angeles

Designed by the California Division of Highways

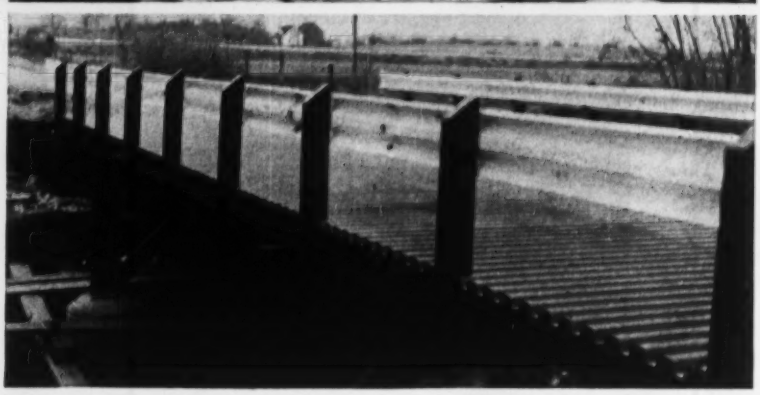
Contractor: Winston Bros., Monrovia, California

CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn Street • Chicago 3, Illinois

Add years of service to old bridge structures with

USF STRUCTURAL-PLATE
BRIDGE FLOORING



Bridges, overpasses, viaducts and similar type crossings with symptoms of old age such as worn, rattling, wood plank flooring can be rejuvenated at surprisingly low cost with USF Structural-Plate Bridge Flooring. It installs rapidly and efficiently, in least possible "out-of-service" time. It minimizes dead load, stiffens and strengthens structure, and provides uniform support for a smooth bituminous wearing surface. Available shop fabricated to your requirements or in standard lengths for emergency stocks.

Get full details **including specifications and engineering data in this free 12-page bulletin.**

UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO
PRODUCTS
Hollow Metal Doors • Prefabricated Metal Buildings • Window Wells • Highway Guard Rail • Bridge Flooring • Steel Forms for Concrete Bridge Floors • Corrugated Metal Pipe • Sectional Plate Pipe and Pipe Arches

ligation to exercise a reasonable degree of care, skill, and ability, which generally is taken and considered to be such a degree of care and skill as, under similar conditions and like surrounding circumstances, is ordinarily employed in their respective professions. Block v. Happ, 144 Ga. 145, 86 S. E. 316; Porter v. Davey Tree-Expert Co., 34 Ga. App. 355, 129 S. E. 557. And while it is true that, on the acceptance of the work by the owner after the architect had rendered the entire service for which he has contracted, the architect was authorized to proceed to collect the balance due him by the terms of the contract, any damage to the owner resulting through the negligent performance of the contract by the architect is a matter of recoupment."

(1) Housing Authority of City of Carrollton v. Ayers, 88 S.E. 2d 368, Supreme Court of Georgia, July 13, 1955.

Contractor Liability For Defects in Work

"Where plans and specifications for an improvement are prepared by engineers of the owner, who are to inspect and supervise the construction and see to it that materials are furnished and work performed in accordance with the specifications, ordinarily the contractor is not liable for the sufficiency of the specifications, but only for the skill with which he performs the work and the soundness of the materials used."[1]

Quoting from another case,[2] the court added: "Where a contractor makes an absolute and unqualified contract to construct a building or perform a given undertaking, it is the general, and perhaps universal rule, that he assumes the risks attending the performance of the contract, and must repair and make good any injury or defect which occurs or develops before the completed work has been delivered to the other party. But where he makes a contract to perform a given undertaking in accordance with prescribed plans and specifications, this rule does not apply. Under such a contract he is not permitted to vary from the prescribed plans and specifications even if he deems them improper and insufficient; and therefore cannot be held to guarantee that the work performed will be free from defects, or withstand the action of the elements, or accomplish the purpose intended. Where the contract specifies what he is to do and the manner and method of doing it, and he does the work specified in the manner specified, his engagement is fulfilled and he remains liable only for defects resulting from

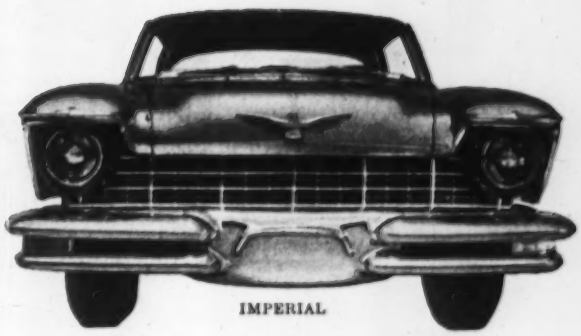
PLYMOUTH

DE SOTO

CHRYSLER

DODGE

Each one of the beautiful '57 Chrysler Corporation cars features Enjay Butyl weather-stripping on the big, wrap-around windshield and rear window. With Enjay Butyl's outstanding resistance to aging, moisture and sunlight, you can count on perfect performance for the life of the car.



IMPERIAL

FRONT AND REAR... ENJAY BUTYL RUBBER WEATHER-STRIPPING SEALS FOR SURE!

Come rain or shine, Enjay Butyl, the weather-proof rubber for window weather-stripping out-performs and out-lasts *all other* rubbers, synthetic or natural. *Moisture-proof* and *impervious to sunlight*, this is the rubber that combines outstanding shock resistance with unparalleled life-expectancy.

In more than 100 places on today's new cars, Enjay Butyl has demonstrated its profitable advantages over all other rubbers. Under the hood . . . in chassis and body... parts made from this super-durable, all-weather rubber have helped make today's new cars safer, more comfortable, and mechanically more sound. For further information, and for expert technical assistance, contact the Enjay Company.

ENJAY BUTYL

Enjay Butyl is the greatest rubber value in the world . . . the super-durable rubber with *outstanding* resistance to aging • abrasion • tear • chipping • cracking • ozone and corona • chemicals • gases • heat • cold • sunlight • moisture.

ENJAY

Pioneer in Petrochemicals

ENJAY COMPANY, INC., 15 West 51st Street, New York 19, N. Y.

Akron • Boston • Chicago • Los Angeles • New Orleans • Tulsa

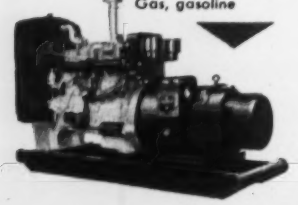
NOW— a complete line of

WAUKESHA

Industrial ENGINATORS®

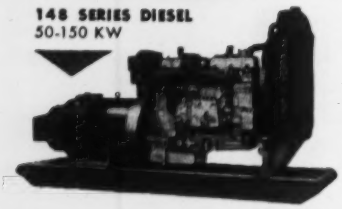
50-700 KW • NATURAL GAS • LPG • GASOLINE • DIESEL

145 SERIES—45-110 KW
Gas, gasoline

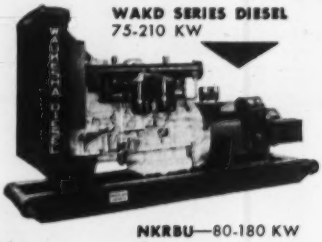


A superb line of Enginators— backed by over 50 years' experience in building heavy-duty engines and electrical equipment. For reliable performance on all fuels, these accurately balanced Waukesha engine-generator combination units supply smooth, steady power in continuous, intermittent and standby service.

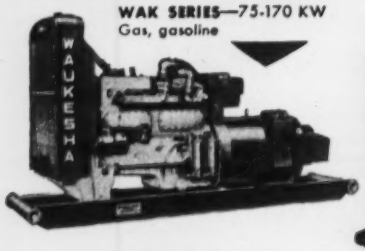
148 SERIES DIESEL
50-150 KW



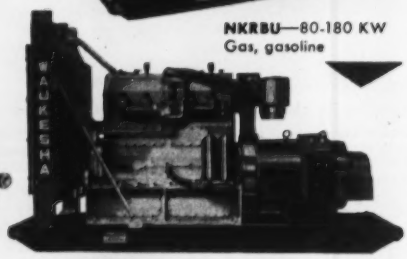
WAKD SERIES DIESEL
75-210 KW



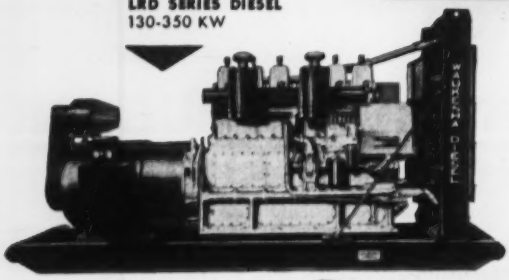
WAK SERIES—75-170 KW
Gas, gasoline



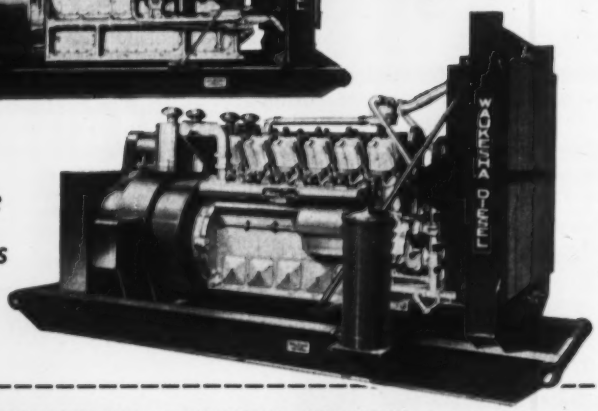
NKRBU—80-180 KW
Gas, gasoline



LRD SERIES DIESEL
130-350 KW



VLR SERIES—250-730 KW
LPG, natural gas, Diesel



WRITE FOR BULLETINS FOR THESE AND OTHER MODELS

333

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN RAILWAY DIVISION

improper workmanship or other fault on his part."

"It is established that ordinarily a contractor is not responsible for defects caused by the acts of the owner during the progress of the work."[3]

(1) State of Nebraska v. Commercial Casualty Co., 248 N.W. 807.
(2) Frederick v. County of Redwood, 152 Minn. 450, 190 N.W. 801.
(3) Burton v. Sellers & Marquis Roofing Co., 168 N.W. 2d 101 and numerous cases there cited.

All Orders for Extra Work May Have To Be in Writing

Construction contracts often contain provisions to the effect that all orders for extra work shall be in writing and that a price for such extra work shall be agreed upon. Where the contract contains such provisions, the courts have held that the contractor cannot recover for alleged extra work unless the contract requirements have been complied with.[1]

A contract contained the following provision: "No alterations shall be made in the work shown or designated by the drawings and specifications except upon the written order of the architect, and when so made the value of the work added or omitted shall be computed by the architect and the amount so ascertained shall be added to or deducted from the contract price. But no extra work will be allowed in any case unless itemized estimate is submitted by contractor and architect's order in writing is given for the same."

The contractor brought an action to recover for extra work performed but was denied a recovery on the ground that the contract requirements as to extra work had not been complied with.[2] The court pointed out that the contract limited the authority of the architect to order extra work.

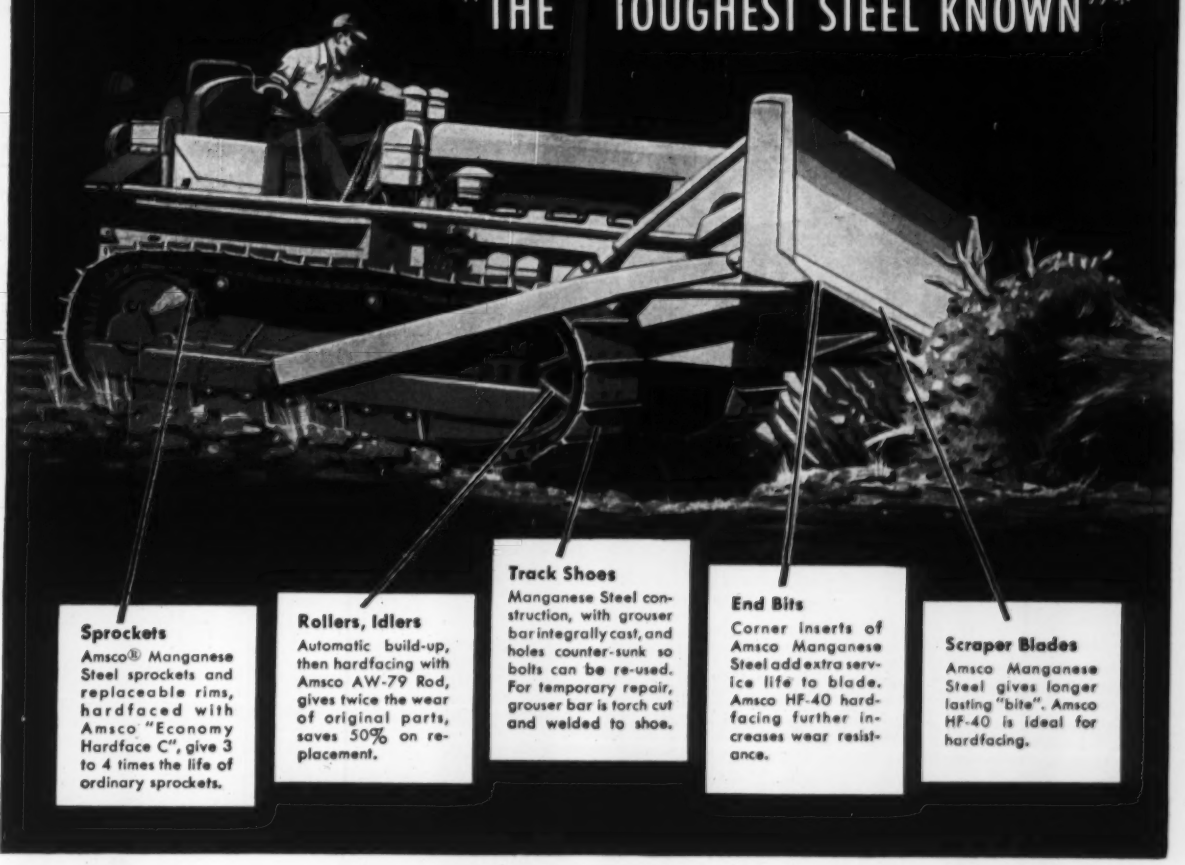
But some cases, however, have held that even where the contract requires a written order for extra work, the contractor is entitled to recover for extra work perfomed pursuant to oral orders, where the owner knows that the architect has given such oral order and knows that the contractor is performing such extra work.

The contractor was given a judgment on the theory that the owner by his conduct has waived the requirement of a written order for the extra work.[3]

(1) United States v. Cunningham, 125 F. 2d 28 and numerous cases there cited.
(2) Langley v. Rouss, 185 N.Y. 201.
(3) Keahon Bros., Inc. v. Blank et al., 161 Misc. 874; Stokes Bros. v. Dreffs, 244 App. Div. 524.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

At these TOUGH WEAR points, specify "THE TOUGHEST STEEL KNOWN"*



Sprockets
Amsco® Manganese Steel sprockets and replaceable rims, hardfaced with Amsco "Economy Hardface C", give 3 to 4 times the life of ordinary sprockets.

Rollers, Idlers
Automatic build-up, then hardfacing with Amsco AW-79 Rod, gives twice the wear of original parts, saves 50% on replacement.

Track Shoes
Manganese Steel construction, with grouser bar integrally cast, and holes counter-sunk so bolts can be re-used. For temporary repair, grouser bar is torch cut and welded to shoe.

End Bits
Corner inserts of Amsco Manganese Steel add extra service life to blade. Amsco HF-40 hardfacing further increases wear resistance.

Scraper Blades
Amsco Manganese Steel gives longer lasting "bite". Amsco HF-40 is ideal for hardfacing.

*AMSCO MANGANESE STEEL . . . plus AMSCO HARDFACING

Shown above are just a few of the "tough wear" points where Amsco products can save you money. Whether for original parts, or for build-up and hardfacing, specify Amsco Manganese Steel and Amsco Hardfacing for maximum operating economy.

We'll be glad to give you full information on Amsco Tractor Parts, Hardfacing Materials or Automatic Welding Machines. Just call your nearby Amsco representative, or write us direct.

OTHER AMSCO PRODUCTS

DIGGING: backhoe buckets—dippers and parts—repointers—dragline bucket parts—dragline chain—sheaves—pinions.

CRUSHING: concaves—mantles—jaw plates—mill liners—hammers.

HANDLING: truck bed liners—grizzly parts—car wheels and liners—sheaves, gears, pinions.

WELDING: automatic and semi-automatic welders—hardfacing rod—manganese plates and shapes.

DISTRIBUTED BY IRON RANGE EQUIPMENT CO.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS; JOLIETTE, QUEBEC

For the first time... an all-purpose hydraulic

"QUICK-WAY"

EXTRA!
NOW! A SENSATIONAL NEW MONEY-MAKER BY "QUICK-WAY"

The new "QUICK-WAY" Chore-Master is the first interchangeable hydraulic grading-digging attachment that makes dozens of jobs possible with one attachment. Now with the new Chore-Master, five crane shovel models, and the most complete standard line of attachments, "QUICK-WAY" is the most versatile machine you can own.

Two large hydraulic cylinders and one hydraulic motor operate the reaching, digging and swivel action of the boom and bucket. A single control lever guides all these actions with a simple twist of the wrist for sure, precision, hydraulic control.

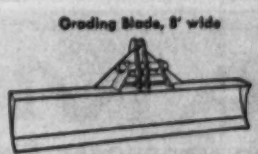
This new attachment can be changed quickly to any of the other "QUICK-WAY" standard attachments.

Radius of boom retracted (open bucket)	21'3"
Radius of boom extended (open bucket)	33'3"
Maximum boom angle (up and down)	45°
Swivel of bucket (either way)	50°
Bucket open or close	90°

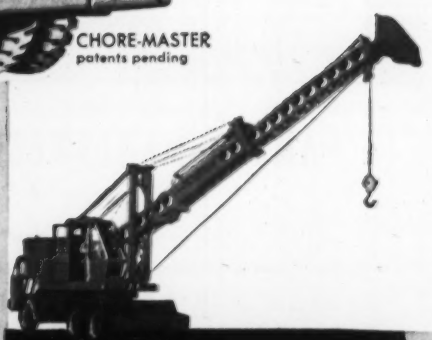
Trenching Bucket, ½ cu. yd.

Cleaning Bucket, 60" wide

Ripper Tooth


Grading Blade, 8' wide

Other Attachments Available



Now!
5
"QUICK-WAY" MODELS
with more BIG SHOVEL features

"QUICK-WAY"®
A Koehring Subsidiary

TRUCK SHOVEL CO.
DENVER, COLORADO

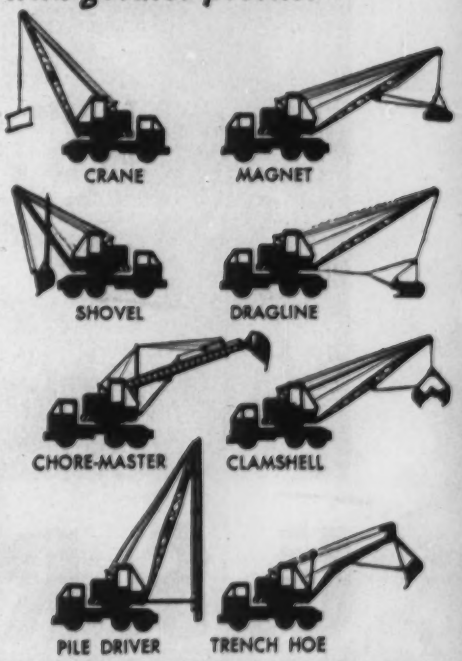
attachment for crane shovels! **THE NEW**

CHORE-MASTER!

JUST LOOK AT THE JOBS YOU CAN DO WITH "QUICK-WAY"® CHORE-MASTER

1. Excavates in close quarters.
2. Reaches under buildings, obstructions, bridges.
3. Precision digs around foundations, culverts, tanks.
4. Precision grades and slopes roadsides.
5. Digs and cleans trenches and backfills.
6. Places pipe and culverts.
7. Removes ice, snow, rips pavement.

Now a "QUICK-WAY"® is the most versatile machine you can own... with ***MORE ATTACHMENTS*** *to handle* ***MORE KINDS OF JOBS*** *with greater profits:*



In addition Backfiller Blade, Orange Peel, Snatch Block, Concrete Bucket, Skull Cracker, Pulp Wood Grapple and many other special tools.

85A—4/10 yd.—8½ Ton

125A—6/10 yd.—12½ Ton

105A—5/10 yd.—10½ Ton

105AC Crawler—85AC Crawler

"QUICK-WAY" TRUCK SHOVEL CO. Dept. 257
2401 East 40th Ave.,
Denver 5, Colorado, U.S.A.

Please send me the following "QUICK-WAY" catalogs:

- ☐ Chore-Master
- ☐ 125A
- ☐ 85A
- ☐ 85AC Crawler
- ☐ 105A
- ☐ 105AC Crawler

Name.....

Title.....

Company.....

Address.....

City and State.....

Keep the job GOING

with exclusive SAFETY STEEL SHIELD*

SEE these thousands of *flexible steel cords* between tread and Super Royalon body. They form a Safety Shield, *invulnerable* to cuts and ruptures in the tread area for original *and* extra recap life!
*Patent applied for.

U. S. ROYAL Super FLEETMASTER

For graders, scrapers, heavy off-the-road equipment—

U.S.ROYAL CON-TRAK-TOR FULL LUG

- **Triple Impact Protection**—added rubber between plies, double shock-pads, extra-tough construction at the crown.
- **Full-Lug Traction**—massive beefed-up lugs extend from shoulder to shoulder, take hold and pull where others slip and spin!

Don't let tire failure hold up your job. Put your trucks on the new U. S. Royal Super Fleetmaster. Its Safety Steel Shield is so immune to hazards that it runs over jagged rocks, even over razor-sharp axblades without losing a pound of air!

This tire's *all-new*—with money-saving advances throughout its construction. It's *all-wheel*—built for every on-and-off-the-road truck exposed to heavy impacts in murderous terrain.

Your U. S. Royal Dealer now has the Super Fleetmaster in sizes through 11.00. Call him today—and specify "Super Fleetmaster" when you buy your new equipment!

US RUBBER **United States Rubber**

Rockefeller Center, New York 20, N. Y. In Canada: Dominion Rubber Co., Ltd.

See things you never saw before. Visit U. S. Rubber's new Exhibit Hall, Rockefeller Center, N. Y.

Books

Transportation

PRINCIPLES OF TRANSPORTATION—By Frank H. Mossman and Newton Morton. 510 pp. The Ronald Press Company, New York. $6.50

The authors of this book give a detailed and well rounded description of the basic principles and practices involved in carrier operation, management and regulation. Transportation economics and administration combined are thoroughly discussed.

This volume is divided into six parts. Parts I, II and III cover fundamental theory and history of major transport facilities. Parts IV, V and VI treat with practice of modern carrier operation and management.

The book is best suited for students in college, in industry or in related fields. A summary is found at the end of each chapter as well as review questions.

The appendix includes "Report of the Presidential Advisory Committee on Transportation Policy and Organization" and "Application of the Specific Penalty Provisions of the Interstate Commerce Act, the Elkins Act, and the Bills of Lading Act."

Building Costs

BUILDING COST MANUAL—By The Joint Committee on Building Costs of the Chicago Chapter of the American Institute of Architects and The Appraisers Division of The Chicago Real Estate Board. 367 pp. John Wiley & Sons, Inc., New York, N. Y. $15. © 1957.

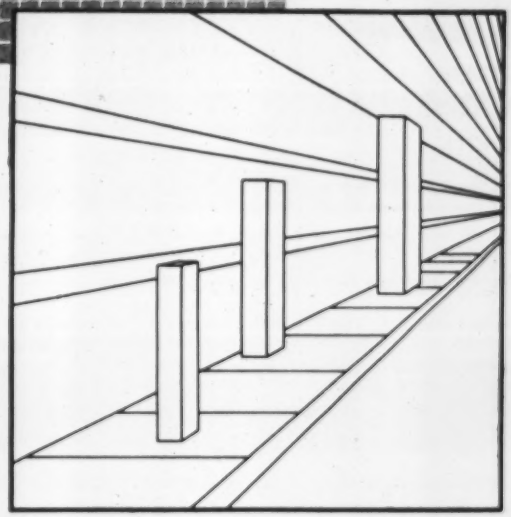
This volume is a joint venture of more than 150 architects, contractors, realtors and other firms associated with building in the Chicago area. Costs per square foot or per cubic foot are shown for many categories of buildings: overall cost, cost of structure and finish, of heating and ventilating, plumbing, electrical, elevators. These are Chicago averages, undated. Factors are given (based on ENR Building Cost Index) for adapting them to other areas. No recommendations are made for adjusting for changes with time.

Detailed instructions on how to "cube" a building are given. Also included is a well organized and comprehensive work sheet for detailed quantity survey estimating with a built-in check list of items to be included. But no costs are shown that result from this "precision" estimating.

Eighteen categories and many subcategories of buildings are shown, with pictures for each and definition of struc-

ARKWRIGHT ODDITIES

Test your "perspective powers" by selecting the largest rectangular column in the accompanying figure. See answer below.



You Can See The Difference When You Use Arkwright Tracing Cloths

Drawings look sharper, cleaner — and *last longer* — when you use Arkwright Tracing Cloths. Here's why.

1. There are no pin holes, coarse threads or other imperfections to mar your workmanship. Arkwright's flawless finish prevents blobbing and feathering . . . assures fast, accurate inking.

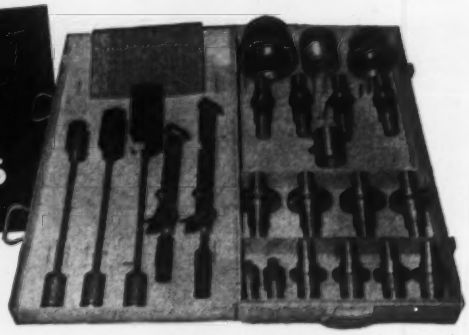
2. There are no surface oils, soaps or waxes to dry out. Arkwright's special quality-controlled processing creates *permanent transparency* . . . eliminates discoloring or brittleness. Made to meet rigid government specifications, its durable finish guards against fraying, tearing or curling.

3. Even after repeated erasures, Arkwright's superior working surface produces sharp, clean drawings . . . makes every detail stand out in its proper perspective. In the simple perspective drawing shown above, all of the rectangular columns are *equal* in size.

You're always right when you ask for the rolls with the blue line that identifies "America's Standard". Write for samples of Arkwright Tracing Cloths today. Arkwright Finishing Co., Industrial Bank Building, Providence, R. I.

ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER [illegible] YEARS

"IN-PLACE" SHEAR READINGS



FAST, ACCURATE, WITH NEW ACKER VANE TEST KIT!

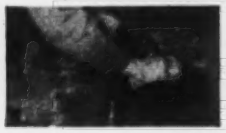
The Acker Vane Shear Test Kit has everything needed to obtain fast, accurate, "in-place" shear readings to depths of 100 feet!

It's easy to use and provides accurate soils information at low cost! For easy in carrying, the entire set of tools are packaged in a handy steel kit.

Write today for prices and free illustrated folder 700! ENR

Assemble the Vane to the Rod!

Insert in Casing and Apply Pressure to the Torque Wrench!



Consult the Torque Chart for Accurate Reading!

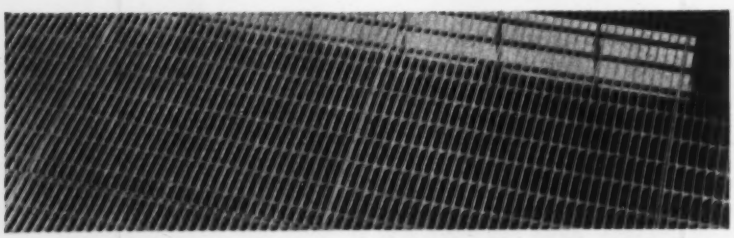
ACKER DRILL CO., INC. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

You get those "WIDE OPEN SPACES" indoors!

Here's a grating that has the strength and rigidity to bear the brunt of heavy traffic yet provides 90% open area for light and air! Ideal for flooring or walkways, Hendrick Mitco Steel Gratings takes the beatings of heavy industrial usage and "keeps on the level" . . . doesn't bend or warp. Made by forcing rectangular square-edged steel bars into integral panels under tons of hydraulic pressure, Hendrick Mitco is "precision-engineered" to afford maximum strength and minimum attention.

"HENDRICK MITCO—THE GRATING WITH THE DEEP CROSS BAR"



HENDRICK (TM)
MANUFACTURING COMPANY
45 DUNDAFF STREET CARBONDALE, PA.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids • Hydro Dehazers • Petrochemical Column Internals.

tural and finish materials and mechanical equipment in the "base" or average structures for which prices are reported. Historical buildings are illustrated and coded to show which reproduction new costs apply to each type. The book's contents are well indexed.

Costs as shown represent reproduction new. They include contractor overhead and profit, insurance, permits. But they do not include cost of land, unusual site preparation, demolition of old structures, landscaping, roads, architect's or engineer's fees, legal fees, taxes, interest or owner's insurance.

As with all cube and square foot costs, these produce rough estimates only—subject to the usual variations due to shape of building, ratio of perimeter to floor area, height of ceiling, ratio of open interior space to walled-in space. Great care has been taken to define them carefully, that they may be used intelligently.

Sewerage Classic Updated

SEWAGE TREATMENT (2nd Edition)—By Karl Imhoff and Gordon M. Fair, 338 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $7.50.

Messrs. Imhoff and Fair have revised the first edition of Sewage Treatment, published in 1940, rather extensively to incorporate progress and changes in practice since that date. The current edition thus represents a clear and concise statement of the present status of sewage treatment in North American cities.

As might be expected, the new book is quite similar to the recently published Disposal of Sewage and Other Water-Borne Wastes, which is a translation of the 16th (and current) edition of Imhoff's Taschenbuch der Stadtentwassurung (ENR Dec. 13, 1956, p. 58). Sewage Treatment differs mainly in its orientation to North American areas and the writing style (Taschenbuch was translated by a German and an Australian).

Reports and Pamphlets

DETAILS OF 140 NUCLEAR REACTORS—Nuclear Reactor Data 2. Raytheon Mfg. Co., Waltham 54, Mass.

WATER-BORNE COMMERCE OF THE UNITED STATES; PART 1, ATLANTIC COAST WATERWAYS AND HARBORS—Division Engineer, New England Division, Corps of Engineers, U. S. Army, 150 Causeway St., Boston 14, Mass. $1.30.

SALT-WATER ENCROACHMENT IN DADE COUNTY, FLORIDA—Dade County Board of County Commissioners, Miami, Fla.

(Books continued on page 126)

MUELLER®

AWWA GATE VALVES

give *tighter* shut-offs

Only Mueller Gate Valves have the exclusive "four-point contact" disc wedging mechanism. Closing pressure is equally distributed to four separate points near the outer edge of each disc. Shut-offs are made faster, easier and tighter - without disc deflection or sliding contact. See your Mueller Representative, Catalog W-96 or write today for full details on the complete line of Mueller Gate Valves.

Iron Body, Bronze Mounted
Double Disc, Parallel Seat Type
"O" Ring Seal or Conventional Packing
2" Operating Nut or Handwheel
Hub, Flanged, Spigot, Universal, Screwed, Mechanical Joint or "Ring-Tite" Ends
Sizes 2" through 48"

"O" Ring Conversion Kits now available for all Mueller Non-Rising Stem Gate Valves up to 12", which were originally equipped with conventional packing.

MUELLER CO. **DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller Limited, Sarnia, Ontario

100th YEAR SERVING the Water Works Industry

QUALITY

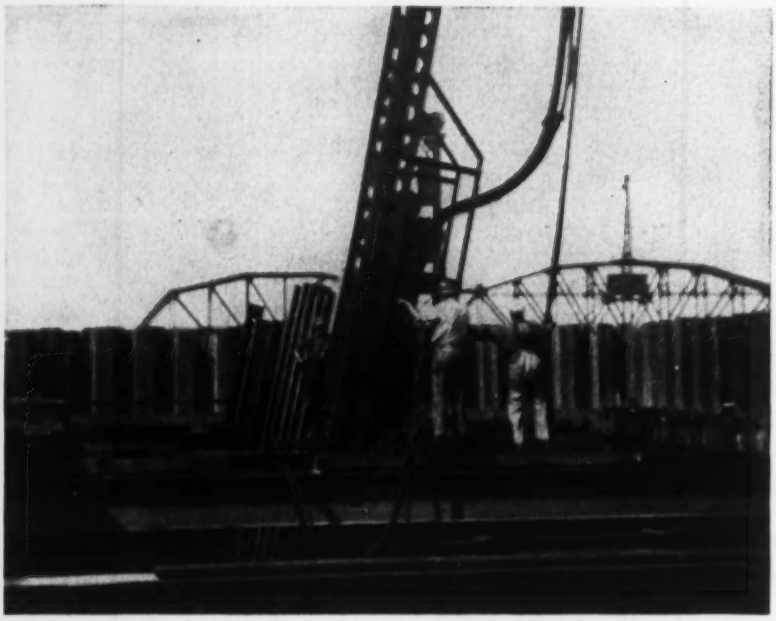
Since 1857

Imperial

the world's finest

TRACING CLOTH

In drafting rooms throughout the world Imperial quality is the standard by which fine tracing cloths are judged. This has been true for decades, and Imperial remains the finest tracing cloth because its makers have continued to improve its quality and value.



Driving one of the 2,568 H-beam 12-in. and 14-in. bearing piles for pier foundations of the 9,500-ft bridge over Newark Bay on the new 8-mile expressway connecting the New Jersey Turnpike with the Holland Tunnel under the Hudson River to New York City. The piles ranged from 67 to 128 ft long, and had to be driven with extreme accuracy through sticky soil to rock. To drive the piles, the contractor, Dravo Corporation, used 9B3 and 10B3 Double-Acting Pile Hammers and an S8 Single-Acting Pile Hammer manufactured by McKiernan-Terry Corporation, 80A Richards Ave., Dover, New Jersey.

. . . Books

NAILS AND SPIKES IN CREOSOTE-PRESSURE-TREATED SOUTHERN PINE POLES AND TIMBERS—by E. George Stern. No. 26. Virginia Polytechnic Institute, Blacksburg, Va.

ATOMIC ENERGY IN CANADA—by Clyde C. Kennedy. 97 pp. Atomic Energy of Canada, Ltd., Chalk River, Ont. $1.00.

TINPLATE HANDBOOK—by W. E. Hoare. 44 pp. Tin Research Institute, Inc., 492 West Sixth Ave., Columbus 1, Ohio.

ANDERSON RANCH DAM—Technical Record of Design and Construction. 231 pp. Bureau of Reclamation, Denver, Colorado.

CALIFORNIA CIVIL ENGINEER AND ENGINEER IN TRAINING EXAMINATIONS—Problems from past California civil engineer and engineer-in-training registration examinations. By August E. Waegemann, 381 pp lithographed. Order direct from author at 2833 Webster St., San Francisco 23, Calif. $7 (California addressees add $0.28 sales tax).

RECORDS AND RESEARCH IN ENGINEERING AND INDUSTRIAL SCIENCE—by J. Edwin Holmstram. 491 pp. Third Edition. Chapman & Hall Ltd., 37 Essex Street, W. C. 2, England. 60s.

RELATION BETWEEN EARTH RESISTIVITY AND GLACIAL DEPOSITS NEAR SHELBYVILLE, ILLINOIS—by James E. Hackett. Circular 223. Illinois State Geological Survey, Urbana, Ill.

FLEXIBLE PAVEMENT DESIGN CORRELATION STUDY—Bulletin 133. Highway Research Board, 2101 Constitution, Washington, D. C. 75¢.

INVESTIGATION OF WATER-QUALITY HYDROLOGY IN THE FORT BELVOIR, VIRGINIA AREA 1954-1955—Geological Survey Office, Room 1242-E, General Services Administration, Washington 25, D. C.

THE DESIGN AND CONSTRUCTION OF ENGINEERING FOUNDATIONS—by F. D. C. Henry. 547 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36. $9.00.

ASTM STANDARDS ON MINERAL AGGREGATES AND CONCRETE (WITH SELECTED HIGHWAY MATERIALS)—348 pp. American Society for Testing Materials, 1916 Race St., Phila., Pa. $3.75; ASTM Members $2.80.

PROCEEDINGS OF THE SIXTH HYDRAULICS CONFERENCE OF THE IOWA INSTITUTE OF HYDRAULIC RESEARCH—276 pp. Bulletin 36. Department of Publications, State University of Iowa, Iowa City, Iowa. $3.50.

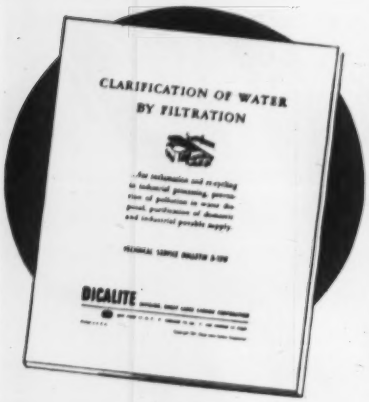
DESIGN FOR ENVIRONMENT: FLOOR-CEILINGS AND SERVICE SYSTEMS IN MULTI-STORY BUILDINGS—Publication 441. 141 pp. National Research Council, Washington, D. C. $4.00.

Roebling Royal Blue Wire Rope will take **shock** after **shock** after **shock!**

This,,and the fact that Royal Blue is stronger than the strongest you have been using, has helped to make it the most widely favored rope in Roebling's history. It will work hard and last longer on *your* job. Your distributor or Roebling Sales Office will give you full information, or write: John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Distributors, Branches and Warehouses Throughout the Country
Subsidiary of The Colorado Fuel and Iron Corporation



These FREE Bulletins provide much valuable data on WATER FILTRATION

. . . industrial reclamation or recycling, waste disposal, and purification of potable water supply. B-12W is largely industrial; F-552 concerns potable supply. Write to

Dependable
GREAT LAKES
GLC Dicalite
DIATOMACEOUS MATERIALS

Dicalite Division • Great Lakes Carbon Corporation, Dept. E
614 South Flower Street
Los Angeles 17, California

Philadelphia Water Main 28% Below Estimate

The four bids on this $68,531 cast iron water main are 21% to 28% below the engineer's estimate. The Philadelphia, Pa., Department of Procurement awarded contract to Ernest Ventresca & Son, Philadelphia. Their price is 1.7% below the second low bid.

Major items including 7,700 lin ft of 6-in. to 20-in. cast iron pipe with valves and manholes are priced separately for furnishing and delivery to the site and for installation. For instance, 8-in. metal-joint pipe is priced $3.50 per lin ft for furnishing and delivery, this is 71% of the unit total, and $1.75 or 29% for installation. Pipe installation accounts with an average of 31.6% for the unit total, while the installation of valves takes an average of only 15.5%.

Prevailing hourly wage rate in Philadelphia include $1.925 to $2.15 for truck drivers, $2.135 for air tool operators, $2.65 for common laborers, $3.155 to $3.905 for tractor and bulldozer operators and $3.95 for steam fitters.

Bidders are:

1C	Ernest Ventresca & Son, Philadelphia, Pa.	$68,531
2	M. & J. B. McHugh, Philadelphia, Pa.	69,713
4	Armour Excavating Inc., Philadelphia, Pa.	74,777
EE	Department of Procurement, City of Philadelphia.	95,000

Bids: 1-8-57 Items	Unit	Quantity	Unit Prices 1 C	2
Excavation, uncl	cy	3,020	$1.50	$2.10
Backfill, f&h	cy	50	4.00	3.00
Valve, met jt, vert, std 150#, 12", furn & deliver	ea	3	228.00	225.00
install	ea	3	40.00	25.00
8", furn & deliver	ea	20	116.00	112.00
install	ea	20	20.00	18.00
6", furn & deliver	ea	10	74.70	73.00
install	ea	10	15.00	12.00
Hub valve, vert, std 150#, 8", furn & deliver	ea	1	98.00	98.00
install	ea	1	24.00	20.00
Tapp valv, vert, std 150#, fl & hub, 6", f&d	ea	3	78.00	75.00
i.	ea	3	15.00	20.00
CIP, met jt, 250#, 20", f&d	lf	38	14.70	15.00
i.	lf	38	4.30	6.00
12", f&d	lf	1,800	6.15	6.40
i.	lf	1,800	1.75	1.90
8", f&d	lf	5,300	3.50	3.70
i.	lf	5,300	1.40	1.40
6", f&d	lf	140	2.45	2.80
i.	lf	140	2.85	1.75
b&s, 250#, 8", f&d	lf	850	3.30	3.50
i.	lf	850	1.40	1.60
6", f&d	lf	70	2.30	2.50
i.	lf	70	2.30	2.00
Specials, CI, met jt, f&d	t	4	540.00	510.00
i	t	4	100.00	100.00
b&s, f&d	t	2.5	360.00	350.00
i	t	2.5	160.00	120.00
MH frame & cov, CI, 31¾" f&d	un	37	31.00	34.00
i	un	37	9.00	4.00
Water vlv, MH ring, conc, f&d	vf	215	11.00	13.00
i.	vf	215	7.60	3.00
Fire hydrants, f&d	ea	9	179.00	174.00
i.	ea	9	45.00	30.00
Remov & deliv to storage yd exist fire hydrants	ea	2	55.00	35.00
exist MH frame & cov, CI	un	3	7.00	10.00
exist valves	ea	2	40.00	20.00
Conc, cl 20-1, f&p	cy	10	26.00	25.00
cl 15-2, f&p	cy	35	25.00	22.00
Pvmt asph, f&l rdway, bit conc, 2", f&l	sy	200	2.00	2.30
	sy	150	1.50	2.00
Iron & steel, misc, f&p	lb	3,400	0.40	0.04
Pvmt, base, PCC, 6&8", f&l	cy	80	20.00	22.00
Blocking, addnl, under pipe	Mfbm	1	60.00	1.00
Shoring lumber, left ip	Mfbm	1	10.00	1.00

b&s—bell and spigot

Time to complete: 80 working days

Detroit Airport Paves Taxiways and Apron

Reinforcing steel for this job is priced per sq yd of pavement. It ranges from $0.53 per sq yd of 11-in. pavement to $0.68 per sq yd of 13-in. pavement. This is 9.2% to 10.6% of the pavement prices.

The grading and paving job at Detroit Wayne Major Airport, Romulus Township, is for the board of Road Commissioners, Wayne County, Mich. Paul J. Glaser is acting airport superintendent.

The $744,349 contract to Bairley & Lindley, Inc., Detroit, is 0.6% below the second low bid and 12.5% below the high eleventh bid.

An area of 108,684 sq ft will be covered by the two taxiways and a portion of the apron in the terminal area. Work includes drainage and sewers.

Specifications require that class A concrete contain six sacks of cement per cu yd and test at 725 lb per sq in. in seven days.

Detroit wage rates are $2.45 for truck drivers, $2.55 for common labor, $3.30 for tractor operators and $3.375 for structural iron workers.

Bidders on this Road Commissioners Project include:

1C	Bairley & Lindley, Inc., Detroit Suburban, Mich.	$744,349
2	The Loselle Construction Co., Wyandotte, Mich.	749,015
11	Taylor Brothers Co., Inc., Birmingham, Mich.	850,513

Bids: 12-18-56 Items	Unit	Quantity	Unit Prices 1 C	2
Underdrain, pvmt, 6", ASTM C-200, incl porous bkfl matl, ip	lf	11,050	$1.80	$1.85
Sewer, VCP or RCP, ES 12"	lf	1,015	3.50	4.55
RCP, SS, culv, 12"	lf	1,370	4.25	4.75
VCP or RCP, ES, 15"	lf	810	4.30	5.00
RCP, SS, culv, 15"	lf	377	5.00	5.15
MH or inlet struct, compl	ea	24	200.00	300.00
exist, adjust to grade	ea	11	60.00	50.00
Sewer, connect to exist MH or inlet	ea	13	20.00	25.00
MH or inlet, reconstruct	ea	2	90.00	125.00
Subbase matl, gran, f&c ip	cy	28,292	1.85	1.85
Pvmt, RC, except reinf stl 11"	sy	12,519	5.07	4.84
12"	sy	90,165	5.23	5.18
13"	sy	6,000	5.72	5.57
Stl, reinf, in 11" pvmt, f&p	sy	12,519	0.53	0.52
in 12" pvmt, f&p	sy	90,165	0.53	0.52
in 13" pvmt, f&p	sy	6,000	0.68	0.72
Exc, earth unclassified	cy	46,521	0.44	0.60

f&c—furnish & consolidate, ip—in place

Work started: 2-15-57 Scheduled to be completed: 7-1-57
No liquidated damages

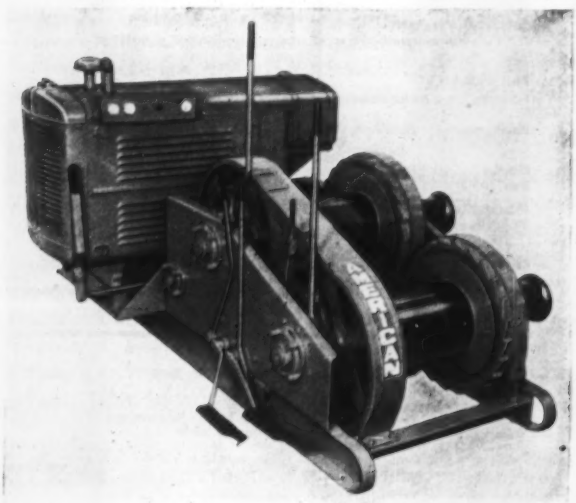
HOIST DOES DOUBLE DUTY ON REMODELING JOB!

Remodeling this 10-story Seattle office building to match a new wing meant the American Hoist working on the job had a two-way load. First, 200 tons of debris came down, then 200 tons of new material went up!

First step for the contractor, Henrik Valle Construction Company was removing a 48″ terra cotta cornice and an eight-foot parapet. By reversing the position of a rub nose bucket on the elevator, it automatically dumped into trucks waiting at the bottom of the 156-foot tower. A 75% time saving in debris handling resulted.

Stopping the loaded bucket after a 10-story drop really tested and proved the American Hoist's powerful brakes! Fast, smooth, positive stops resulted from the big contracting band friction brake. Going up on express runs to the roof, the American Hoist speeded lifting of 200 tons of new material. Smooth gripping contracting band friction clutches take hold without shock—start the load up fast!

Reliable, economical hoist performance is a vital part of a job's success. On the big jobs—the long haul, continuous operation assignments, rugged American Hoists are, by far, the first choice.



On every job where dependability and peak performance are demanded, you'll find Americans at the bottom of the tower! Ask owners and operators how they like them—and have your nearest American Distributor show you complete specifications on a line that starts with capacities of 3,000 pounds, single line pull.

Rated at a capacity of 5,000 pounds single line pull, the American Model 50-B General Purpose Hoist is available with single, double and double drum with swinger. Choice of gasoline or electric power.

AMERICAN HOIST
and Derrick Company
Saint Paul 7, Minnesota

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb. 28; Next Mar. 28.
- Wage Rates, Building Board, Lath, Insulation: Last, Feb. 28; Next Mar. 28.
- Cement, Aggregates, Ready-mixed Concrete, Asphalt: Last, Mar. 7; Next Apr. 4.
- Iron & Steel Products, Pine: Last, Mar. 14; Next, Apr. 11.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta †	**$83.00**	**$88.00**	**$77.50**	**$76.00**	**$87.00**	**$95.00**	**$150.00**	.....	.....
Baltimore *	**92.00**	**96.00**	**96.00**	**98.00**	**98.00**	**102.00**	**114.00**		
	97.50g	*105.00g*	*122.00g*	*122.00g*	*122.00g*	*122.00g*	*153.00g*	*$144.00*	*$144.00*
Birmingham †	**97.00**	**99.00**	**82.00**	**89.00**	**92.00**	**97.00**	**112.00**		
	108.50	*108.50*	*105.00*	*108.00*	*108.00*	*115.00*	*111.50*	*108.50*	*108.50*
Boston ‡	**98.00/**	**98.00/**	**104.00/**	**104.00/**	**104.00/**	**116.00a**			
	96.00m	*96.00m*	*113.00*	*113.00*	*113.00*	*120.00*	*123.00*	*132.00*	*138.00*
Chicago **	**93.00**	**96.00**	**90.00**	**104.00**	**112.00**	**113.00**	**108.00**		
	102.00	*102.00*	*115.00*	*113.00*	*113.00*	*114.00*	*122.00*	*122.00*	*122.00*
Cincinnati *	**96.00**	**97.25**	**87.00**	**93.25**	**98.00**	**106.00**	**119.50**		
	99.25	*97.50*	*102.00*	*104.00*	*105.00*	*108.50*	*130.00*	*130.00*	*130.00*
Cleveland **	**94.00**	**95.00**	**99.00**	**97.00**	**97.00**	**97.00**			
			116.00	*108.00*	*108.00*	*108.00*	*136.00*	*136.00*	*136.00*
Dallas k‡	**68.00**	**70.00**	**65.00**	**65.00**	**65.00**	**70.00**	**135.00**		
Denver *	*Not in stock*		*135.00*	*135.00*	*135.00*	*140.00*	*156.00*	*160.00*	*160.00*
Detroit ‡	**116.50**	**119.50**	**114.00**	**117.00**	**122.00**	**127.00**			
	125.00	*125.00*	*130.00*	*132.50*	*130.00*	*135.00*	*185.00*	*195.00*	*195.00*
Kansas City *	**120.00**	**125.00**	**120.00**	**125.00**	**130.00**	**135.00**			
	130.00	*125.00*	*125.00*	*125.00*	*125.00*	*130.00*	*165.00*	*185.00*	*210.00*
Los Angeles i	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*119.00*	*130.00*	*130.00*
Minneapolis #	*140.00*	*140.00*	*148.00*	*148.00*	*148.00*	*148.00*	*185.00*	*185.00*	*185.00*
Montreal ab	**90.00**	**100.00**	**90.00**	**90.00**	**108.00**	**125.00**			
	180.00	*180.00*	*180.00*	*180.00*	*180.00*	*180.00*	*170.00*	*170.00*	*170.00*
New Orleans †	**92.00**	**92.00**	**94.00**	**94.00**	**93.00**	**100.00**	**124.50**		
†	*110.00*	*110.00*	*106.50*	*120.00*	*120.00*	*120.00*	*152.50*	*152.50*	*152.50*
New York ‡	**109.00**	**110.00**	**119.00**	**120.00**	**120.00**	**125.00**			
			119.00	*122.00*	*122.00*	*124.00*	*165.00*	*165.00*	*165.00*
Philadelphia ‡		Range from $117.00 to $137.00				**117/137**	**117/137**		
		Range from $131.00 to $163.00				*151/163*	*156/158*	*165.00*	*165.00*
Pittsburgh 2	**130.00**	**140.00**	**130.00**	**155.00**	**140.00**	**145.00**			
	180.00	*140.00*	*130.00*	*155.00*	*140.00*	*145.00*		*200.00*	*200.00*
St. Louis #	**115.00**	**117.00**	**125.00/**	**125.00/**	**125.00e**	**130.00e**			
			132.00	*132.00e*	*132.00e*	*136.00e*	*192.00e*	*192.00*	*192.00*
San Francisco A	*80.00*	*80.00*	*82.00*	*82.00*	*82.00*	*82.00*	*114.00*	*122.00*	*129.00*
Seattle †	*65.00*	*70.00*	*70.00*	*70.00*	*70.00*	*74.00*	*90.00*	*90.00*	*95.00*
Toronto a	**98.00**	**100.00**	**95.00**	**98.00**	**100.00**	**100.00**			
	114.00	*114.00*	*130.00*	*122.00*	*126.00*	*130.00*	*145.00*	*140.00*	*180.00*

LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
2x12 Rgh	12x12 Rgh	3/8"	1/4"
		$22.32	**$27.24**
$170.00	**$185.00**	*25.92*	*31.60*
		.....	.....
115.00	**160.00**	*21.78*	*26.58*
.....	.....	.....	.....
.....	.....	*25.92*	*31.60*
.....	.....	.....	.....
136.00	**136.00**	*22.45*	*27.37*
.....	.....	.....	.....
141.75	**141.75**	*25.00*	*30.48*
.....	.....	.....	.....
.....	.....	*25.37*	*30.93*
.....	.....	.....	.....
130.00	**125.00**	*18.72*	*22.80*
.....	.....	*13.92*	*16.98*
130.00	.....	*25.00*	*30.48*
.....	.....	.....	.....
.....	.....	*16.56*	*20.16*
.....	.....	.....	.....
.....	.....	*16.61ab*	*20.25ab*
.....	.....	*19.89*	*24.25*
123.00	**123.00**	.....	.....
.....	.....	.....	.....
184.00	**184.00**	*18.72*	*22.80*
.....	.....	.....	.....
250.00	**265.00**	*25.92*	*31.60*
.....	.....	.....	.....
214/224	**214/224**	*25.92*	*31.60*
.....	.....	.....	.....
185.00	.....	*25.92*	*31.60*
.....	.....	.....	.....
.....	.....	*18.72*	*22.80*
.....	.....	.....	.....
.....	.....	*12.22*	*14.91a*
.....	.....	.....	.....
102.00	.....	.....	.....
.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. $. sad., truckload lots, 8/8 M†bm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. °a Spruce. °b Tax exempt. °c 8M lots. °d 8, 10, & 12 ft. lengths. °e 8 to 16 ft. lengths. °f Hemlock °g No. 1 common. °j 8ft. lengths. °k No. 3 common. °n #3. A incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 3/8", $152.00; on 1/4", $170.00. Exterior 3/8", $156.00, 1/4", $174.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. °a Lower rate by water shipment. °b 80,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	78%e	78%e	$0.2540
Baltimore	74%d	76%d	.2540
Birmingham	82%	83%	.1990
Boston	73-10%	72-10%	.2540
Chicago	73%	72%	.2540
Cincinnati	74%	74%	.2540
Cleveland	74-2-10%	74-2-10%	.2040
Dallas	78%	78%	.2615
Denver	73%	73%	.2590
Detroit	74-10-10%	74-10-10%	.2540
Kansas City	76-10%	76-10%	.2590
Los Angeles	70%	76%	.2565
Minneapolis	71-10%	71-10%	.2590
Montreal	40-10-5%bc	40-10-5%b	22.05h
New Orleans	75%	76%	.2590
New York	79%	79%	.4425g
Philadelphia	74-10%	76-10%	.2540
Pittsburgh	73%	73%	.2540
St. Louis	72-10-10%	72-10-10%	.2590
San Francisco	80%	72%	.2540
Seattle	67%	70%	.2565

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: °a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.80 for B quality; 14 x 20, ds, $80.00 for A quality, $82.75 for B quality. °b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. °c 77% for single strength °d Discount 6/15/52. °e 77% for double strength

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2½", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. °g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. °h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1990	$0.2340	$0.2540
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.2040	.2390	.2590
Rocky Mtn. States	.2040	.2390	.2590
Pacific N. W. States	.2015	.2365	.2565
Pacific S. W. States	.1990	.2340	.2540

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	.....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	.....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	.....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	.....	.....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	.....	.....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.88	.....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.73/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	.....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	.....	1.03

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		8' x 8" x 8' Untr.	8' x 8" x 8' Tr.	7' x 8" x 8'8" Untr.	7' x 8" x 8'8" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.80	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.60a
New York	S. L. Sap Pine	2.00d	4.00d	3.00g	6.00g
	Mixed Oak	2.50d	4.50d	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.65	.....	2.95	.....
	Red Oak	2.55	3.25a	2.80	3.60a
	Sap Pine or Cypress	.....	3.15a	.....	3.55a
San Francisco	Douglas Fir	2.03ef	2.96ef	2.84bef	4.31caf

Tr.—Treated; Untr.—Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell d 6 x 8 x 8'6" e Green. f f.o.b. cars. g 7 x 9 x 8'8" * Add 75¢/tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

Driving form pins on the New York Thruway near Fultonville, New York.

Drilling rock for blasting on the northeastern extension of the Pennsylvania Turnpike, Quakertown, Pa.

Le Roi Tractair "plugs the leaks" in new highway construction

Versatile low-cost tractor-compressor keeps expensive major equipment rolling

Idle big equipment drains off profits. Every hour a dozer, shovel, or paver sits around waiting, it means capital investment down the drain.

Low-cost Tractair is a fast-moving source of airpower that moves quickly from site-to-site with its own tools. Its usefulness is further increased by a wide range of attachments like back hoe, front-end loader, and dozer blade, that give Tractair big-equipment usefulness without "big-ticket" costs!

Tractair can stay in front of big equipment, prevent delay. It can roll up to a rock face and drill in a round so shovels can load out, dozers and graders swing in to blue-top grade; power jack hammers on a street-repair job or run along driving form pins to speed pavers.

You don't tie up a truck to move your compressor. No investment leak there. Tractair moves alone—saves you about 50% of the cost of a truck *and* compressor normally needed. Tractair stamina pulls it through thick mud and over slippery ground — places that a truck couldn't go. Tools, operator, and power source, roll up to work ready to go all day, all weather.

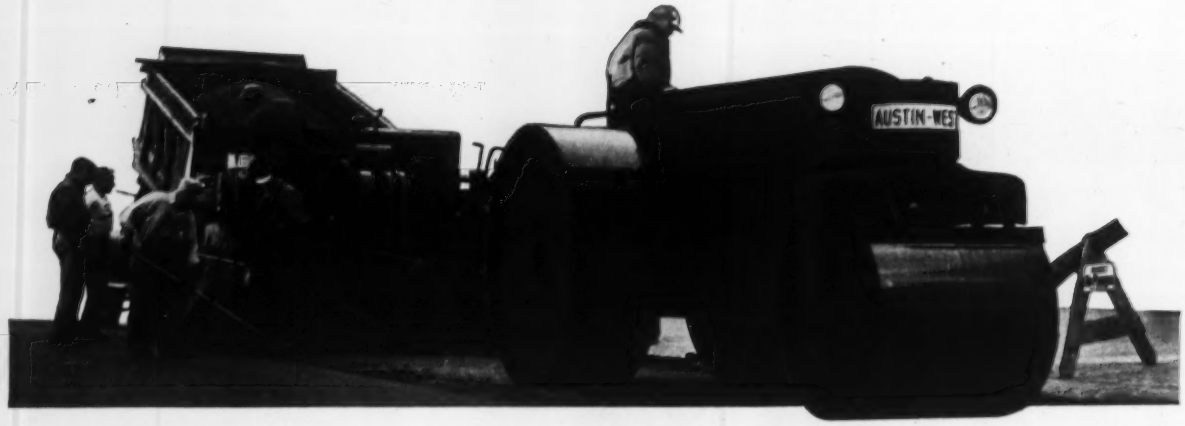
Tractair is the one piece of equipment that is never idle. With its many tools and attachments it serves as a reserve labor gang, limited in usefulness only by your ingenuity!

See Tractair at your Le Roi Distributor. You'll quickly see how a small investment here keeps big equipment rolling on the big road jobs. 7-71

Loader-equipped Tractair powering jack hammer on Major Deegan Expressway, Bronx, New York.

LE ROI

Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.



THE A-W 3-WHEEL ROLLER

8-11, 10-12, 12-14 ton models. The left drive roll is keyed to the axle shaft; the right turns on heavy duty bushings independent of the left roll and axle. Torque-proportioning-type differential transfers power automatically from a slipping roll to the opposite one, giving traction under almost any conditions.

THE A-W TANDEM ROLLER

5-8, 8-12, 10-14 ton models. Full-width seat and dual controls are standard on all models. Forward and reverse levers are located at each side of the platform, steering lever at center, thus permitting the operator to sit where visibility is best.

Austin-Western also builds a 3½-6 ton Portable Tandem Roller

AUSTIN-WESTERN ROAD ROLLERS

...Engineered for precision operation from power unit to final drive

This new series by America's pioneer manufacturer of motor rollers features smooth, flowing power, carefully balanced weight, and finger-tip hydraulic steering. These advantages mean increased maneuverability and faster, more efficient compaction.

All A-W rollers are powered by your choice of gasoline or diesel engines with 4-speed (regular) or 2-speed (optional) transmissions. Torque converter drives are available. The drum-type front and rear rolls permit sand and water ballast variations in weight up to 4 tons. Here are some typical design and construction features:

- **Oversize axles and antifriction bearings for longer life.**
- **All transmission gears are machine cut and heat treated**
- **Entire transmission is equipped with antifriction bearings**
- **3-wheel rollers have heat-treated alloy steel bull pinions and high strength steel bull gears**
- **Tandem rollers have machine-cut, heat treated final drive bevel gears and pinions**
- **Outside edges of finished rolls are beveled to prevent marks in hot materials**

More than 75% of all parts of the 3-wheel and tandem rollers are interchangeable—an important advantage for the man who owns both kinds. See your nearby Austin-Western distributor. Or write us for complete information.

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

BALDWIN · BLH · LIMA-HAMILTON

AUSTIN-WESTERN WORKS
BALDWIN-LIMA-HAMILTON
Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Standard Steel Works • Madsen • Pelton
AURORA, ILLINOIS, U.S.A.

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Conn., Westport — SCHOOL — BA 3/26 — Town, School Bldg. Comm., Jessup Rd., Burr Farms Elementary School, $700,000. CD 10/16, under LB.

▲ **Mass., Arlington**—SCHOOL—BA 4/4—Town, School Dpt., 23 Maple St., Senior High School addn., alterations, Massachusetts Ave. $1,716,500. Plans deposit $100, refundable. Kroslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, archts. Goldberg & LeMessurier Assoc., 667 Boylston St., Boston, struc. engrs. CD 8/3.

† **Mass., Ayer**—QUARTERS—BA 4/5—U. S. Eng., 150 Causeway St., Boston, family quarters (35) MCA, Fort Devens, ENG-19-016-57-181. $600,000-$700,000. Plans deposit $25, refundable. Arthur G. Manasellan & Assoc., 30 Huntington Ave., Boston, archts. CD 9/7/54.

Vt., Derby—SCHOOL—BA 4/10—Derby Academy, Main St., Junior-Senior High School, Main St. $510,460. Plans deposit $50. Roland M. Whittier, 108 Shelburne St., Burlington, archt. Jennison Eng., Inc., 15 Center St., Burlington, Vt., mech. engr. CD 9/18.

▲ **Mass., Chelmsford** — SCHOOL — BA 4/17 — Town, School Bldg. Comm., 50 Billerica St., high school, North and Old Westford Rds. $2,000,000. Plans deposit $50. Rice & Tucker Assoc., 45 Newbury St., Boston, archts. CD 8/30.

▲ **Mass., Milton**—SCHOOL—BA 4/18—Town, Central Ave., West Junior High School, Sumner Pierce Elementary School site, $1,520,000. Plans deposit $100,- Adden, Parker, Clinch & Crimp, 177 State St., Boston, archts. CD 7/9.

BUILDINGS—SLC

Mass., Woburn—PLANT, etc.—Sylvania Electric Products, Inc., 460 Market St., Williamsport, Pa., soon lets contract mfg. plant addn. and office. Rte. 128, $800,000. Plans deposit $25, refundable. Paul H. Van Wert, 699 Belmont St., Williamsport, Pa., archt. CD 12/26.

▲ **N. H., Portsmouth**—HOUSING—Purch. & Contg. Officer, Air Force Base, soon lets contract construct and finance 1,100 housing units (Capehart) Air Force Base, IFB 27-604-57-3, $18,000,000. Koehler & Isaak, 1880 Elm St., Manchester, archts. Joseph L. Paley, 105 Newbury St., Boston, Mass.; engr. CD 3/1.

HEAVY CONSTRUCTION—LB & CA

† **Brown Constr., Inc.,** 22 Monument Square, Portland, Me. CA **$584,100,** est. $600,000. permanent communications facilities, Naval Air Station, NBy 50, Spec. 50/56, BRUNSWICK, ME. First Naval Dist., 495 Summer St., Boston, Mass. CD 3/5, under LB.

VERMONT—State Dpt. Hys., State House, Montpelier, Frank W. Whitcomb, Box 429, Bellows Falls, Vt., CA **$548,430.** highway and bridge work, Vt. Rt. No. 10 Springfield and North Springfield, Bids Feb. 28, CD 3/6, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

S. & M. Constr. Co., 30 Salmon Rd., Providence, R. I. CA **$1,214,063,** est. $1,275,737. hy. constr., relocation Rte. 2, FAP F 348 (2), Orange and Wendell. CD 2/28, under LB.

BUILDINGS—LB & CA

Mishara Constr. Co. Inc., 353 Washington St., Brighton, Mass., LB **$743,000.** Proj. NH 56-C-204-A6, ELEMENTARY SCHOOL, Horne St., DOVER, N. H. City, School Dist. Union No. 11, Dover, N. H. CD 2/28.

Carroll Verge & Whipple, Inc., 370 Waconah St., Pittsfield, Mass., CA **$546,846,** est. $500,000. ACADEMY Addn., alterations, Convent Ave. RUTLAND, VT. Mount St. Josephs' Academy, 132 Convent Ave., Rutland, Vt. Bids Feb. 15. CD 2/20, under LB.

▲ **Maguire Homes, Inc.,** 67 Sudbury St., Boston, Mass. CA **$1,743,907.** Capehart FAMILY HOUSING on-site work at Swansea, Rehboth, Topsfield, Beverly, Randolph, Bedford and Hull, ENG-19-016-57-32, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 1/25, under LB.

M. Solimando, 584 Columbia Rd., Dorchester, Mass. CA **$567,626,** est. $750,000. M-729 Contr. 3, WARD BLDG., Cushing Hospital, FRAMINGHAM, MASS. State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. CD 2/27, under LB.

C. R. Burns & Sons 21 Doran Rd., Brookline, Mass. LB **$699,000.** East Elementary SCHOOL, SHARON, MASS. Town, East Elementary School Bldg. Comm., Sharon, Mass. Bids Mar. 7. CD 2/13.

▲ **John Capobianco,** 101 Tremont St., Boston, Mass. CA **$1,416,000.** E-802 GYMNASIUM and LIBRARY, State Teachers' College, WORCESTER, MASS. State, Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. CD 2/19, under LB.

J. S. Mason, N. Windham Rd., Willimantic, Conn. LB **$583,000** (6 bidders) North-West and South-East Elementary Schools, brick, MANSFIELD, CONN. Town, Mansfield, Conn. Malmfeldt Assocs., 36 Pearl St., Hartford, Conn., archts.; Paul D. Bemis, 36 Pearl St., Hartford, Conn., engr. CD 2/26/56.

F. W. Brown Co., 25 Chestnut St., Norwich, Conn. DORMITORY addn. to Katherine Blunt House, LB Est. **$800,000,** (6 bidders) NEW LONDON, CONN., Connecticut College, Mohegan Ave., New London, Conn., CD 12/27.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., Utica**—HEADQUARTERS—BA 4/8—Oneida Co., 3 story, 139,000 sq. ft. concrete headquarters for Mohawk Airlines, $2,500,000. Ammann & Whitney, 111 Eighth Ave., New York, Zone 11, archts. CD 3/1.

† **New York**—TRAINING CENTER—BA On Or About 4/16—U. S. Eng., 111 E. St., New York, Zone 3, U.S.A.R. Training Center, Queens, ENG-30-075-57-362, $250,000-$500,000. Plans deposit $50.

† **N. Y., New York**—BUILDINGS—BA On Or About 4/18—Veterans Admin., Munitions Bldg., Wash., D. C., altering Bldgs. 1 and 21 at Kingsbridge Hospital; Proj. No. 31-5496, $500,000. Hart, Jerman & Assoc., 250 E. 43 St., Zone 17, archts. CD 3/13/56.

BUILDINGS—BA

▲ **N. Y., Fairport**—HIGH SCHOOL, etc.—BA 3/27—Bd. Educ., high school, bus garage, development of athletic fields and tennis courts. $2,450,000.

HEAVY CONSTRUCTION—LB & CA

▲ **Turner Constr. Co.,** 150 E. 42 St., New York, N. Y. CA **$12,000,000.** Maintenance hangar incl. office area, cafeteria, parking space, New York International Airport, ½ mi. from Belt Parkway on access road which is an extension of Van Wyck Expressway, IDLEWILD, N. Y. American Airlines, Inc., N. Y. International Airport, Idlewild, N. Y. CD 2/25/53.

▲† **Five Boro Constr. Co.,** 2 Lafayette St., New York 7, N. Y. LB **$1,765,000.** (8 bidders.) central heating plant and steam distr. sys., FY 1957 program, Griffis Air Force Base, ENG-30-075-57-322, ROME, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 1/30.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton,

Franklin Contg. Co., Inc., 12 Central Ave., Newark, N. J. CA **$902,947.** Rte. 208 viaduct over proposed Main St. relocated Diamond Creek, Erie R.R. main line and Boulevard in borough of Glen Rock, Bergen Co. CD 1/9, under LB.

▲ **American Dredging Co.,** 12 S. 12 St., Phila., Pa. CA **$3,151,350.** dredging Delaware River, Phila. Co., ENG-36-109-57-41, PENNSYLVANIA. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Dec. 27, awarded Jan. 30. CD 1/24, under LB.

BUILDINGS—LB & CA

Mozzicato Constr. Co., 168 Mystic Ave., Medford, Mass. LB **$415,940,** est. $400,000. LIBRARY and TOWN HALL addn., alterations, 644 Pleasant St., BELMONT, N. Y. Town, Library Bldg. Comm., Walter E. Boright, chn., 644 Pleasant St., Belmont, Mass. Bids Mar. 7. CD 2/6.

Frank Balcerzak & Sons., Medina, N. Y. CA **$599,500.** general contract DORMITORY Unit "A" State Teachers College, BROCKPORT, N. Y. Dormitory Auth., 55 Grant Ave., Albany, N. Y. CD 1/16, under LB.

▲ **I. & O. A. Slutzky, Inc.,** Hunter, N. Y. LB **$1,187,-852.** two DORMITORIES State Teachers College, Water St. and Broadway, CORTLAND, N. Y. State Dormitory Auth., 55 Grant Ave., Albany, N. Y. Bids Feb. 15. CD 2/6.

N & H Associates, Inc., c/o Joseph C. Platzner Co., 145 E. 149 St., New York 51, N. Y. Owner Builds. **$700,000.** 1 story, concrete WAREHOUSE and OFFICE, Bronx River Ave., NEW YORK, N. Y.

▲ **Arthur O. Shaw,** 172 State St., West Englewood, N. J. Owner Builds. **$1,225,000.** 36 HOUSES, Winston Woods Estates at Shaw Rd., Second Sect., WOODCLIFF LAKE, N. J. Peter Butler, 172 State St., West Englewood, N. J., archt.

▲ **Charles Grillo,** 5 Myrtle Ave., Summit, N. J. Owner Builds. **$3,000,000.** 50 to 60 HOUSES, Blackburn Rd., SUMMIT, N. J. Wm. G. Chirgotis, 968 Stuyvesant Ave., Union, N. J., archt.

▲ **Sylvania Electric Products Co.,** 460 Market St., Williamsport, Pa., rejected bids Dec. 21, 1 story MFG. PLANT, ALTOONA, PA. LB **$1,563,000.** CD 1/6, under LB.

Merando, Inc., 4098 Minnesota Ave. N. E., Wash. D. C. CA **$691,290.** 2 story masonry Pomonkey High School, LA PLATA, MD. Bd. Educ., Charles Co., LaPlata, Md. Bids Feb. 5, awarded Mar. 4. CD 2/1.

SOUTH

HEAVY CONSTRUCTION—BA

† **MISSISSIPPI**—BA 4/19—Bureau P. Rds., Dpt. Commerce, First National Bank Bldg., Florence, Ala.,

Sharkey Co.—steel I-beam and concrete bridge on concrete pile substructure 1,042 mi. over Little Sunflower River, three quadruple box culverts approaches on the Kelso-Holly Bluff Rd., Mississippi National Forest, Miss. Forest Hy. Proj. No. 34-A., adv. ENR 3/21.

BUILDINGS—SLC

La., Lake Charles—OFFICE—Petroleum Chemicals, Inc., Factors Bldg., New Orleans, soon lets contract 2 story, steel office. $500,000.

La., New Orleans—DORMITORY, etc.—Tulane University, 6823 St. Charles Ave., soon lets contract women's dormitory and lounge, renovations of Doris Hall Bldg. for Newcomb College. $560,000. Ricciuti Assn., 521 Royal St., archts. CD 9/10.

HEAVY CONSTRUCTION—LB & CA

▲† **Blackwell Eng. Co.,** Box 358, Merrifield, Va., LB **$1,526,858.** (8 bidders) Proj. 1-A-2, 1-A-3, 1-A-4, piers and superstructure for 3 viaducts, Washington Memorial Parkway, Arlington Co., VIRGINIA. Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va. Bids Mar. 7. CD 2/28.

▲† **Doyle & Russell,** Central National Bank Bldg., Richmond, Va. CA **$1,631,700.** guided missile support facilities, Naval Mine Depot, NBy 3508, YORKTOWN, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Feb. 26, awarded Mar. 4. CD 3/1, under LB.

NORTH CAROLINA—State Hy. & P. Wks., Comm., Raleigh,

Wilson Constr. Co., Inc., Box 603, Salisbury, N. C. CA **$847,629** structures, bridges on relocation of U. S. 70 near Morganton, Proj. IN-700 (8), Burke Co. Bids Feb. 26, awarded Mar. 4. CD 3/4, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

LOW COST POWER
for WRECKING-SMASHING

FREDERICK CAST Semi-Steel
DROP BALLS

Tough, rugged Frederick Drop Balls eliminate expensive drilling, blasting . . . deliver smashing low cost power when you want it, where you want it. Exclusive "Pear-shape" design drops straight—swings true—withstands greater impact. Balls 4000 lbs. or over are made of extra durable nickel alloy—or special alloys furnished on request. "E-Z" Swing recessed steel eye gives greater cable protection plus free swinging action. Balls can be furnished with replaceable pins. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Special release hooks for free dropping also available.

Wide range of sizes and weights!

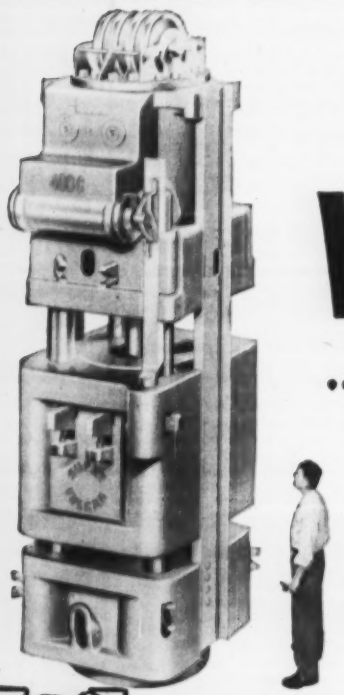
Pear shape (lbs.).....	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.).....	500	1000	2000	5200			
Spherical shape (lbs.). (for magnet use)	470	950	1650	2400	3000	3700	5400

Write us today for prices and illustrated literature; order Balls direct or see your nearest Equipment Dealer.

FREDERICK IRON & STEEL, INC.
FREDERICK *Established 1890* MARYLAND

Phone: MOnument 3-5111

Makers of Manhole Frames, Covers and Steps • Storm Gratings
Meter Frames and Covers • Centrifugal Pumps • Grey Iron Castings



VULCAN

...the name to remember when you specify or buy

PILE DRIVING HAMMERS and PILING EXTRACTORS

Manufacturers of Pile Driving Hammers and Piling Extractors Since 1852

VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago, U. S. A.

▲ **NORTH CAROLINA**—State Hy. & Pub. Wks. Comm., Raleigh,

N. C.—**Barrus Constr. Co.**, Box 395, Kinston, N. C. CA **$1,196,044.** grading, CABC, b. conc. binder surf. 10.53 mi. on US 70, Proj. F-168 (14), Carven Co.;

N. C.—**Brown Paving Co.**, Box 484, Lexington, N. C. CA **$758,542.** STBC, bit. surf. tr. bit. con. binder surf. 10.6 mi. on relocation of US-301, Proj. IN-703, (5), Harnett-Johnston Counties. Bids Feb. 26, awarded Mar. 4. CD 3/4, under LB.

▲† **Ballenger Paving Co.**, Box 927, Greenville, S. C., LB **$1,292,578,** taxiway realignment, for Dpt. Air Force, DAWSONVILLE, GA. Lockheed Aircraft Corp., Marietta, Ga. Bids Mar. 5. CD 2/21.

▲ **ALABAMA**—State Hy. Dpt., Montgomery. Bids opened 3/1.

Ala.—**Clyde O. Mitchell**, 104 N. 44 St., Birmingham, Ala., LB **$919,575,** grading, draining 14.787 mi. Winston Co.; LB **$134,467,** grading, draining 8.298 mi. Blount Co.; LB **$289,140,** grading, draining 6.269 mi. Fayette and Walker Counties; LB **$118,271,** bit. 7.897 mi. Marion Co.;

Ala.—**McKee Constr. Co.**, Jackson, Ala., LB **$127,771.** bit. 6.078 mi. Washington Co.;

Ala.—**Burgreen Constr. Co.**, Athens, Ala., LB **$461,173** grading, draining 22.027 mi. Limestone and Madison Counties. CD 2/20.

BUILDINGS—LB & CA

▲† **Virginia Eng. Co., Inc.**, 80 29 St., Newport News, Va. CA **$2,588,000.** enlisted men's and enlisted waves BARRACKS, Naval Station, NBy 7690, Spec. 7690/56, NORFOLK, VA. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Feb. 12, awarded Mar. 4. CD 2/14, under LB.

▲ **E. I. duPont deNemours & Co.**, duPont and Nemours Bldg., Wilmington, Del. Owner Builds. **$2,000,000,** nylon plant, RICHMOND, VA. CD 9/26.

▲ **Smith & Turley Co.**, 1955 Poplar St., Memphis, Tenn., LB **$2,511,192.** 160-unit Capehart HOUSING, U. S. Marine Corps Supply Center, NBy-10234, Spec. 10234/56, ALBANY, GA. P. Wks. Office, Bldg. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 5. CD 1/15.

Chilton Constr. Co., Dunedin, Fla., LB **$535,363,** Highland JUNIOR HIGH SCHOOL, Dunedin, CLEARWATER, FLA. Bd. Pub. Instruction, Court House, Clearwater, Fla. Bids Feb 27. CD 2/26.

▲ **Duval Eng. & Constr. Co.**, 1746 E. Adams St., Jacksonville, Fla. CA **$1,082,785.** site imprvs. for MFG. PLANT and OFFICES, S. Orange Blossom Trail, ORLANDO, FLA. Glenn L. Martin Co., 500 Elwell St., Municipal Airport, Orlando, Fla. Bids Feb. 9. CD 2/13, under LB.

Gustav Hirsch Organization, Inc., 1347 W. Fifth Ave., Columbus, O. CA **$604,000.** electronics work at Russell, Ky. Yard; rewiring passenger station at Huntington, W. Va., remodeling Chafin Bldg., Huntington, W. Va., KENTUCKY AND WEST VIRGINIA. Chesapeake & Ohio R.R. Co., T. F. Burris, ch. engr., Huntington, W. Va. Bids Mar. 1. CD 2/26, under Ky., Russell.

MIDDLE WEST

BUILDINGS—BA

O., **Grafton**—SCHOOL—BA 4/4—Midview Bd. Educ., Grafton, Grafton School addn. $493,000. Plans deposit $50. Beiswenger, Hoch, Olds & Verbeke, 661 W. Market St., Akron, archts. CD 11/12.

▲ **Ind., South Bend**—SEMINARY—BA 4/8—Holy Cross Fathers, Notre Dame University, South Bend, 5 story, bsmnt., Moreau Seminary. $2,000,000. Belli & Belli, 6040 W. Fullerton Ave., Chicago, Ill., archts. CD 10/12.

O., **Shaker Heights**—AUDITORIUM—BA 4/9—Shaker Heights Bd. Educ., 3115 Woodbury Rd., Cleveland, Zone 20, auditorium for Byron Junior High School, $750,000. Plans deposit $50 for general, $25 for mechanical. Perkins & Will, 309 W. Jackson St., Chicago, Ill. and Michael M. Kane & Assoc., 12381 Cedar Rd., Cleveland, Zone 6, archts. CD 11/9.

BUILDINGS—SLC

▲ **Ill., Chicago**—BANK—Republic Savings & Loan Assn., 5350 S. Kedzie Ave., soon lets contract 2 story bank, Kedzie and 62 Pl. $1,000,000. Chicago Bank Equipment Co., 4711 N. Clark St., archt. CD 3/4.

HEAVY CONSTRUCTION—LB & CA

National Constr. Co., 23500 Lakeland Blvd., Cleveland 23, O., CA **$666,928.** Clague Rd. water mains, CLEVELAND, O. City, Dpt. P. Utilities, Emil J. Crown, dir., City Hall, Cleveland, O. Bids Jan. 25, awarded Mar. 6. CD 2/1, under LB.

† **George W. Timmons Co.**, 780 W. Lane Ave., Columbus, O., LB **$773,668** (7 bidders) 1 story, 23,700 sq. ft. open mess, Lockbourne Air Force Base, ENG-46-022-57-16, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Feb. 21. CD 2/11.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago. Bids opened 3/7.

ISTHC—**S. J. Groves & Sons Co.**, 1104 W. Reynolds St., Springfield, Ill., LB **$8,799,237,** Contract N-7B, paving, appurtenances, precast concrete and structural steel bridges 3.53 mi. beginning at E. of Elmhurst Rd. southwesterly to near Devon and Higgins Rd., Cook Co.;

ISTHC—**H. H. Mass Co.**, Algonquin, Ill., **McCarthy Imprvt. Co.**, 602 Kahl Bldg., Davenport, Iowa, and **Dillon Stone Co.**, Columbus Junction, Iowa, LB **$3,360,714.** Contract N-4D, paving, appurtenances, precast concrete bridges 4.09 mi. south of Elgin beginning near State Rte. 59 and extending easterly to near State Rte. 31, Kane Co. CD 2/19.

† **Capital Steel & Iron Co.**, 1726 S. Agnew St., Oklahoma City, Okla., CA **$295,443.** furnishing, erecting

(Continued on page 136)

There are times when

ONLY THE BEST* WILL DO!

In prime coats, for example, you've got to have a priming material that penetrates deeply without separation, coats even dusty, fine aggregate particles uniformly, and binds them together tightly. That's why there's no substitute for Tarmac® as a prime coating for new base construction.

After penetration, Tarmac sets-up, binding the entire penetrated depth together into a firm waterproof layer. And Tarmac prime provides a tackiness which promotes an excellent bond between base and surface courses.

There's a copy of the "Tarmac Handbook" that's yours for the asking. For this handy guide to road construction methods, address your request to: Koppers Company, Inc., Tar Products Division, Dept. 122C, Pittsburgh 19, Pa.

When planning your roads, remember the extra values* **TARMAC® *gives you over other bitumens:*

1. Faster coating of aggregate
2. Superior penetration
3. Better binding properties
4. Superior moisture resistance
5. Resistance to stripping
6. Self-healing properties

KOPPERS

TARMAC® ROAD MATERIALS

HARDWARE

Hot Dip Galvanized or Black For HEAVY Construction

Made to your specifications of:

Steel or Genuine Wrought Iron.

SHIPPED *TODAY* IF NECESSARY

Bolts, Screw Anchors, Tie Rods

Upset Rods, Straps, Washers, Staples

Dock Spikes, Manhole Hardware, etc.

JERSEY BOLT & SPIKE CORPORATION

MANUFACTURERS • FABRICATORS

Plant and Main Office: 9 Lister Avenue, Newark 5, New Jersey

Direct lines: New Jersey MArket 3-0333 New York REctor 2-3958

ADVERTISEMENT FOR BIDS

Northern Illinois Toll Highway

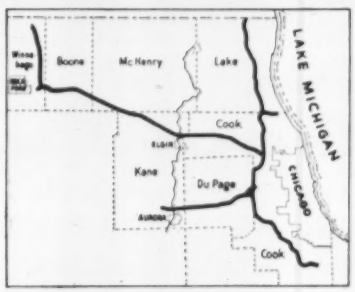
Bids to be opened April 11, 1957

CONTRACT T-4A

The work to be done under this contract shall be commenced not later than ten (10) days after the date set forth in the Notice to Proceed from the Chief Engineer of the Commission. All work under this Contract shall be completed on or before December 15, 1958 and consists of: The construction of a dual two-lane bridge structure, exclusive of furnishing, fabricating and erecting structural steel and the furnishing of prestressed concrete girders, for approximately 0.91 miles of the Tri-State Route of the Northern Illinois Toll Highway in Construction Section T-4A thereof, beginning at a point north of 79th Street (extended) and extending Northwesterly across the tracks of the Gulf, Mobile and Ohio R.R., the Illinois and Michigan Canal, the Chicago Sanitary and Ship Canal, the Des Plaines River and the yards of the Atchison, Topeka and Santa Fe R.R. and other property adjacent to the above mentioned locations between centerline station 1288 + 14.59 and centerline station 1337 + 55.75 of the Tri-State Route in Lyons Twp., Cook Co., Ill.

The approximate quantities of the principal items of work are:

Borrow	92,000 Cu. Yd.
Structure Excavation, Common	18,000 Cu. Yd.
Structure Excavation, Rock	300 Cu. Yd.
Furnishing Metal Pile Shells	6,400 Lin. Ft.
Driving and Filling Metal Pile Shells	6,400 Lin. Ft.
Structure Concrete	33,500 Cu. Yd.
Reinforcing Steel	3,330,000 Lbs.
Prestressed Girders (Erection)	38,000 Lin. Ft.
Aluminum Pipe Handrail	20,000 Lin. Ft.



CONTRACT E-1A

The work to be done under this Contract shall be commenced on June 30, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before December 15, 1958 and consists of: The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete and steel bridges for approximately 3.67 miles of the Northern Illinois Toll Highway in Construction Section E-1A thereof, beginning at a point about 4,300 feet West of Deerpath Road (TR 214A) at Northern Illinois Toll Highway Centerline Station 6642 + 80.79 in Sugar Grove Twp., Kane Co., Ill., and extending Easterly to a point about 150 feet west of State Route 31 at Northern Illinois Toll Highway Centerline 6837 + 40 in Aurora Twp., Kane Co., Ill.

The approximate quantities for the principal items of work are as follows:

Roadway Excavation	518,000 Cu. Yd.
Borrow	103,000 Cu. Yd.
Selected Subgrade	80,000 Cu. Yd.
Granular Subbase	43,400 Cu. Yd.
10" Reinforced PCC Pavement	127,700 Sq. Yd.
3" Bituminous Concrete Shoulders	75,000 Sq. Yd.
Structure Concrete	2,920 Cu. Yd.
Reinforcing Steel	375,000 Lb.
Structurel Steel (erection only)	614,000 Lb.

THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

20 N. Wacker Dr., Chicago — **By Austin L. Wyman, Chairman**

Write, wire or phone for detailed information and necessary forms, Chief Engineer, Room 1854, 20 N. Wacker Dr., Chicago 6, Ill. Telephone Franklin 2-7020.

Previously advertised bids for Contracts T-1B and T-2A will be opened April 4, 1957.

(Continued from page 134)

structural steel for aircraft shelters Truax Air Force Base, MADISON, WIS. U. S. Eng., 428 Federal Bldg., Milwaukee, Wis. CD 8/22.

Keeley Bros. Constr. Co., 4211 State St., East St. Louis, Ill., CA **$524,775**, sewers and extens. and expansion of water system, CAHOKIA (East St. Louis P.O.) ILL. Village Bd. Trustees, Village Hall, Cahokia, Ill. CD 4/1/55.

BUILDINGS—LB & CA

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock St., Cincinnati, O., CA **$1,407,088**, 85-bed HOSPITAL ADDN. CINCINNATI, O., Bethseda Hospital, Oak and Winslow Ave., Cincinnati, O. Bids Feb. 14. CD 2/26, under LB.

Penker Constr. Co., 1030 Summer St., Cincinnati, O., CA **$614,000**. 50-bed HOSPITAL addn., Mariemont, CINCINNATI, O. Our Lady of Mercy Hospital, Rowan Hills Dr., Mariemont, O. CD 2/7, under LB.

Frank Messer & Sons, Inc., 4612 Paddock St., Cincinnati, O., CA **$763,000**. LABORATORY EXTENSIONS, Jewish Hospital, CINCINNATI, O. Jewish Hospital, Burnet Ave., Cincinnati, O. Bids Feb. 21. CD 2/26, under LB.

Humel Constr. Co., 17706 Miles Rd., Cleveland 28, O., CA **$647,000**. HIGH SCHOOL addn., EUCLID, O. Bd. Educ., 23131 Lake Shore Blvd., Euclid 23, O. Bids Feb. 28, awarded Mar. 5. CD 3/6, under LB.

▲ **Illinois Homes**, 5918 State St., East St. Louis, Ill. Owner Builds. **$1,500,000**. 200 national HOMES in Countryside Gardens, off Hy. 157, CASEYVILLE, ILL.

▲ **Brickman Home Builders**, 7830 W. Lawrence Ave., Chicago, Ill. Own Forces. **$2,000,000**. 130 HOMES, bounded by Argyle, Ozanan, Overhill and Winona Sts., NORRIDGE, ILL. A. J. Del Bianco, 5501 W. Irving Park Rd., Chicago, Ill., archt.

J. H. Findorff & Sons, Inc., 601 W. Wilson St., Madison, Wis., LB **$714,592**, general contract Units A and B, INFIRMARY, MENDOTA, WIS. State Dpt. P. Welfare, Madison, Wis. Bids Feb. 28. CD 1/18.

T. S. Willis, 20 E. Milwaukee St., Janesville, Wis., CA Est. **$500,000**. 3 story, 125x150 ft. OFFICE, WEST BEND, WIS. West Bend Aluminum Co., West Bend, Wis. Bids Feb. 7. CD 1/4, under Industrial Buildings.

▲ **Bryant & Detwiler Co.**, 2110 Penobscot Bldg., Detroit, Mich. CA Est. **$3,300,000**. 2 story, (fifth and sixth stories), Henry Ford HOSPITAL addn., DETROIT, MICH. Henry Ford Hospital, 2799 W. Grand Blvd., Detroit, Mich. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., archt.

City, Louise Shaw, clk., 13600 Oak Park Blvd., Oak Park, Mich., rejected bids Jan. 28, CIVIC CENTER, COMMUNITY BLDG., LIBRARY, etc., OAK PARK, MICH. LB **$589,241**. CD 2/6, under LB.

▲ **Vinyard Homes, Inc.**, 8131 Timberline St., Shelby, Mich. Owner Builds. **$1,800,000**. 110 brick ranch HOMES, SHELBY, MICH.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Mo. Kansas City**—OFFICE, etc.—BA 4/10—Downtown Redevelopment Corp., c/o Forest D. Byars, secy., Hotel Continental, Kansas City, Mo., office and parking garage, 8th to 9th Sts. and Main to Walnut Sts. $5,000,000. Keene & Simpson & Murphy, 15 W. 10 St., Kansas City, Mo., archts. CD 7/23.

▲ **Kan., Fort Riley**—HOUSING—BA On Or About 4/11—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., construct and finance 433 housing units, (Capehart), ENG-23-028-57-72, $5,800,000. Glen Eidson, 11 E. Gregory St., Kansas City, Mo., assoc. archt. Hare & Hare, 114 W. 10 St., Kansas City, Mo., archts. Harry Noble, Reliance Bldg., Kansas City, Mo., struct. engrs. CD 12/14.

BUILDINGS—SLC

Iowa, Decorah—COLLEGE—Luther College, soon lets contract addn. to Brandt Hall. $500,000. Chas. Altfillisch, Decorah, archt.

HEAVY CONSTRUCTION—LB & CA

▲ **IOWA**—State Hy. Comm., Ames, Bids opened 3/5, Iowa—**Booth & Olson, Inc.**, 529 Insurance Exchange Bldg., Sioux City, Iowa, LB **$103,396**, c. conc. 1.288 mi. F-781 (11) Appanoose Co.; LB **$392,721** c. conc. 4.811 mi. Special F-875 (1); LB **$77,335**, c. conc. 0.519 mi. P-1093, both Johnson Co.; LB **$290,577**, c. conc. wid'n. 13.827 mi., F-153 (3) Appanoose and Davis Counties; LB **$178,835**, c. conc. wid'n. 9.034 mi. FN-52, Audubon Co.; LB **$227,438**, c. conc. wid'n. 13.516 mi. F-283 (1) Bremer Co.; LB **$327,696**, c. conc. wid'n. 15.685 mi. FN-154, Carroll Co.; LB **$111,207**, c. conc. wid'n. 5.578 mi. F-41 (12), Floyd Co.; LB **$188,060**, c. conc. wid'n. 9.88 mi. FN-795, Monona Co.; LB **$76,624**, c. conc. wid'n. 4.015 mi. F-795 (3), Monona Co.; LB **$146,192**, grading 3.986 mi. F-1049 (3), Black Hawk Co.;

Iowa—**Fred Carlson Co.**, Decorah, Iowa, LB **$592,240**. c. conc. 9.568 mi. F-1049 (2), Black Hawk and Buchanan Counties;

Iowa—**Quad City Constr. Co.**, 644 25 Ave., Rock Island, Ill., LB **$468,955**. c. conc. 2.704 mi. U-UG-17 (7), Dubuque Co.;

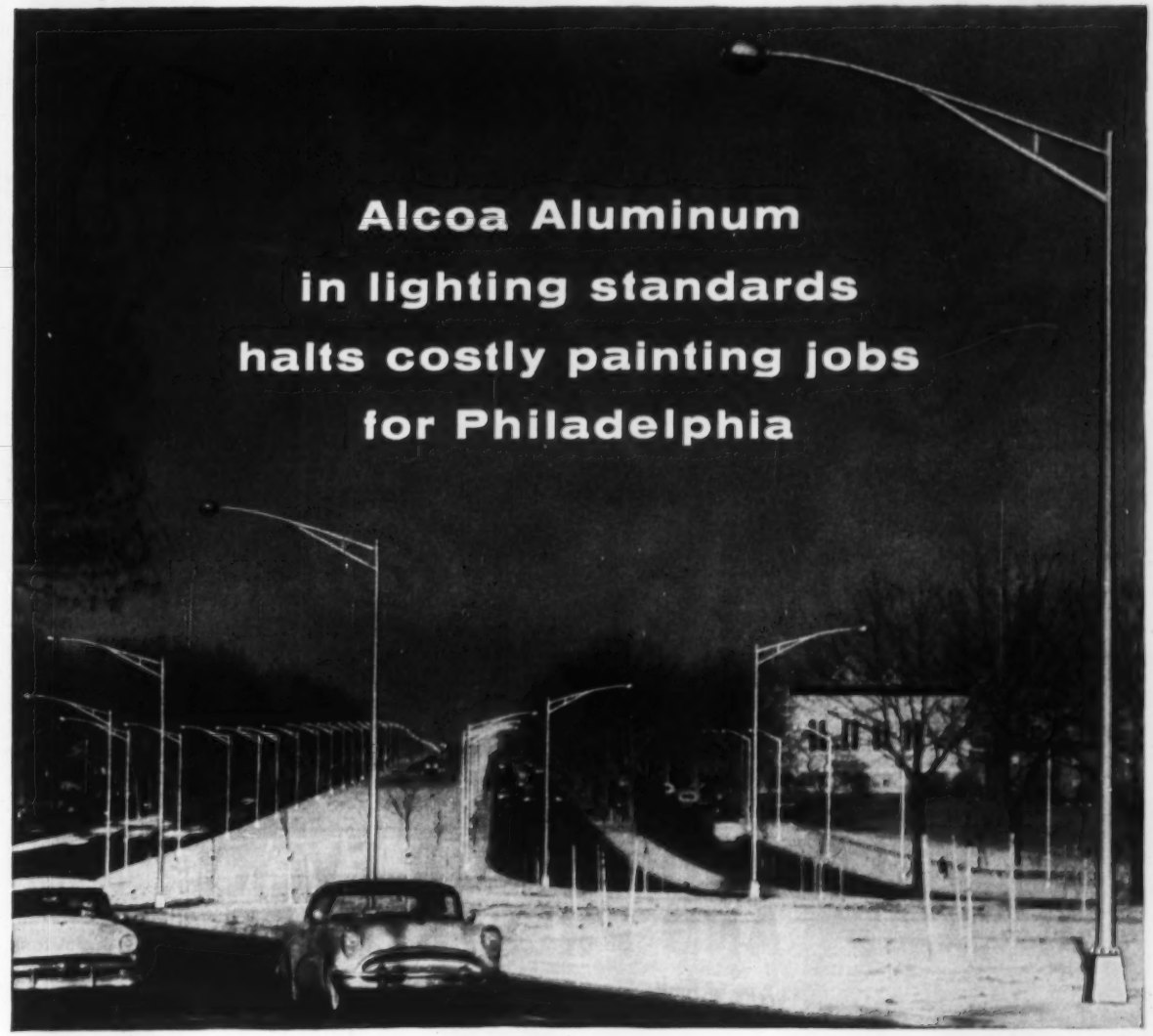
Iowa—**Hallett Constr. Co.**, Crosby, Minn., LB **$113,242**. c. conc. wid'n. 5.13 mi. F-420 (8), Lyon Co.;

Iowa—**Fort Dodge Limestone Co.**, 522 S. 22 St., Fort Dodge, Iowa, LB **$98,065**, b. conc. 2.566 mi. Special FN-1063, Calhoun Co.; LB **$166,260**. b. conc. 6.831 mi. S-1256 (2), Wright Co.;

Iowa—**Iowa Road Building Co.**, Fairmont, Minn., LB **$120,616**. b. conc. 4.857 mi. S-766 (3), Cherokee Co.; LB **$84,872**, b. conc. 4.899 mi. S-415 (2), Dickinson Co.; LB **$78,180**. b. conc. 1.808 mi. FN-419, Jackson Co.;

Iowa—**Concrete Materials & Constr. Co.**, 405 Granby Bldg., Cedar Rapids, Iowa, LB **$162,043**. b. conc. 7.542 mi. S-2485 (3), Linn Co.; LB **$204,694**. b. conc. 5.299 mi. Special F-911 (2), Tama Co.;

(Continued on page 138)



When Philadelphia relied on steel for lighting standards, each pole ran up a contract painting maintenance bill of $12.00 every two or three years. This ended in 1951, for in that year the City of Philadelphia switched 100% to lighting standards of aluminum . . . both for replacements and new installations.

That means no more painting—ever! Aluminum is free from corrosion that weakens wall strength and ruins appearance. No scale piles up in the interior to threaten electrical circuits. And light weight makes erection so inexpensive that first cost is generally comparable with cheaper but heavier metals.

Philadelphia already has 3,000 aluminum lighting standards in service. Included are 1,000 on beautiful Roosevelt Boulevard and another 500 at National Airport, where even the 92 mph winds of "Hurricane Hazel" inflicted no damage. Hundreds more are due for installation as the city remodels its lighting system.

Alcoa® does not make lighting standards, but supplies aluminum for their manufacture to leading companies. For the names of these firms, write to: Aluminum Company of America, 1974-C Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM
MILL PRODUCTS

Your Guide to the Best in Aluminum Value

THE ALCOA HOUR—
Television's Finest Live Drama — Alternate Sunday Evenings

GOT THIS?
(Predraining Problem)

GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

(Continued from page 136)

Iowa—**Norris Constr. Co.**, Ottumwa, Iowa, LB **$151,770**. b. conc. 5.255 mi. S-1112 (2); LB **$148,020**. b. conc. 6.086 mi. S-2332 (1); LB **$188,732**. b. conc. 7.754 mi. S-2332 (2), all foregoing Louisa Co.;

Iowa—**Green Limestone Co.**, Greene, Iowa, LB **$90,784**. b. conc. 4.935 mi. S-1257 (3), Mitchell Co.; LB **$128,670**. b. conc. 3.357 mi. Special F-998 (2), Worth Co.; LB **$192,170**. b. conc. 4.585 mi. Special F-1022 (2), Worth Co.;

Iowa—**Alexander Constr. Co.**, 4641 Hiawatha Ave., Minneapolis, Minn., LB **$105,891**. b. conc. 3.578 mi. S-952 (3); LB **$119,148**, b. conc. 5.657 mi. S-1517 (2W), Polk Co.;

Iowa—**Everds Bros.**, Algona, Iowa, LB **$186,042**. b. conc. 10.341 mi. S-292 (3); LB **$150,666**. b. conc. 8.04 mi. S-296 (4), both Webster Co.;

Iowa—**Western Eng. Co.**, Harlan, Iowa, LB **$75,059**. b. conc. 3.551 mi. S-1610 (3), Woodbury Co.;

Iowa—**Land Constr. Co.**, 302 Seneca St., St. Joseph, Mo., LB **$350,385**. b. conc. wid'n. and resurf. 8.786 mi. Wid'n. F-1093 (1), Lee Co.;

Iowa—**The Willman Co.**, Highway 150N, Cedar Rapids, Iowa, LB **$118,170**. rolled stone base and bit. surf. tr. 8.004 mi. S-881 (4), Franklin Co.

Iowa—**Illinois Valley Constr. Co.**, Keokuk, Iowa, LB **$89,267**, rolled stone base and bit. surf. tr. 5.496 mi. S-1677 (4), Muscatine Co.;

Iowa—**R. Sam Krage Co.**, 419 Victoria St., Sioux City, Iowa, LB **$176,328**. grading 9.024 mi. Special F-906 (2) Dallas and Polk Counties;

Iowa—**John Hyman & Sons**, Hull, Iowa, LB **$74,414**. grading 9.493 mi. Widn. FN-214, Harrison Co.;

Iowa—**H. F. Schroeder & Sons**, Carroll, Iowa and **Ira Van Buskirk & Sons**, Hawarden, Iowa, LB **$2,207,077** grading 14.019 mi. I-902 (4), Harrison and Pottawattamie Counties; LB **$445,847**. grading 4.466 mi. In 902 (3), LB **$291,755**. grading 0.933 mi. U-1087 (1), both Pottawattamie Co.;

Iowa—**Scothorn Constr. Co.**, Cherokee, Iowa, LB **$139,679** grading 6.953 mi. Special F-894 (1), Humboldt and Kossuth Counties;

Iowa—**Lowe Constr. Co.**, Marion, Iowa, LB **$515,089** grading 8.655 mi. IN-I-IG-853 (3), Warren Co.; CD 2/20.

▲ **IOWA**—State Hy. Comn. Ames, Bids opened 3/5,

Iowa—**Jensen Constr. Co.**, 1901 Easton Blvd., Des Moines, Iowa, LB **$139,411**, Group No. 1, five 12x144 ft. concrete slab culverts, also 2 twin 24x37 ft. conc. slab bridge, twin 410x28 ft. continuous welded girder bridges, twin 180x28 ft. continuous concrete girder bridges, two 30x20 ft. concrete slab bridge, two twin 29 ft. 6-in.x37 ft. concrete slab bridges at various location on relocation of U.S. 75 I-920 (4), Harrison and Pottawattamie Counties; LB **$82,336**, Group 2, for above project, I-920 (4), LB **$428,708**, Group 3, for above project, I-920 (4); LB **$145,296** Group 4, above project, I-920 (4); LB **$103,114**, Group 6, above project, I-920 (4) all foregoing Harrison and Pottawattamie Counties; LB **$303,249**, Group 2, twin 66-in. corr. metal pipe and F-1 rein.-con. pipe culvert with special concr. box connections and flap gates, twin 320x28 ft. continuous welded girder bridges, various locations on relocation US 75, IN-920 (3), Pottawattamie Co.;

Iowa—**Burton Constr. Co.**, Waterloo, Iowa, LB **$108,890**. Group 2, 2 rein.-con. box culverts, also twin 180x28 ft. continuous concrete girder bridge on relocation of US 20, F-1049 (3), Black Hawk Co.;

Iowa—**A. Olson Constr. Co.**, Waterloo, Iowa, LB **$132,303** Group 3, 13 rein-con. box and pipe culverts also 36x58 ft. concrete slab bridge 337x28 ft. post-tensioned prestressed concrete beam bridge at various locations F-906 (2), Dallas and Polk Counties;

Iowa—**Yegge & Blosser**, Boone, Iowa, LB **$117,335** Group 4, same above project, F-906 (2), Dallas and Polk Counties;

Iowa—**Christensen Bros.**, 3300 Broken Kettle Rd., Sioux City, Iowa, LB **$127,976**. 34x5 ft.x24 ft. continuous I-beam bridge with two 60x24 ft. I-beam approach spans on local road over Big Sioux River at Akron, SN-2474, Plymouth Co.;

Iowa—**Brogan Constr. Co.**, 321 Locust St., Des Moines, Iowa, LB **$277,512**, Group 3, 198 ft. 9-in x 24 ft. pre-tensioned prestressed concrete beam bridge also 198 ft. 9-in. x 24 in. pretensioned prestressed concrete beam bridge, twin 280 x 28 ft. contiuous concrete box girder bridges, 198 ft. 9-in. 24 ft. pretensioned prestressed concrete beam bridge at various locations on relocation of Iowa 69, I-853 (5), Polk and Warren Counties;

Iowa—**Schmidt Contr. Co.**, Winfield, Iowa, LB **$155,492** Group 5, same as above project, I-853 (5) Polk and Warren Counties;

Iowa—**Iowa Bridge Co.**, 5770 2 St., Des Moines, Iowa., LB **$962,383**, 657 x 42 ft. continuous I-beam bridge on Iowa 46, UN-867, Polk Co.;

Iowa—**Montgomery & Herberger**, Humboldt, Iowa, LB **$94,915**, 300 x 20 ft. continuous I-beam bridge on County Trunk Road "R", S-785 (5), Pottawattamie Co.;

Iowa—**F. A. Moser**, Farmersburg, Iowa, LB **$206,503**. Group 1, 32 rein.-con. box arch and F-1 pipe culverts also triple 15-18-15x12x151 ft. rein.-con. box culverts twin 12 x 10 x 199 ft. rein.-con. box culvert and flume at various locations on US 69 IN-I-IG-853 (3), Warren Co. Bids Mar. 5. CD 2/20.

† **M. Eischeld Contg. Co.**, New Hampton, Iowa, CA **$574,512**, channel imprvs. on Upper Iowa River, Sched. 2, Reach B, 2,083,000 cu. yd. drag-line excav. NEW ALBIN, IOWA. U. S. Eng., 1217 Post Office & Custom House St. Paul, Minn. Bids 1/17, CD 1/25 under LB.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 3/1,

Mo.—**St. Louis County Bridge & Grading Co.**, 7929 Alabama Ave., St. Louis, Mo., LB **$171,128**. (5 bidders) 99 ft. prestressed concrete girder spans and stairs pedestrian overpass, St. Louis Co. and St. Louis City.

(Continued on page 143)

ATLAS FORMS FOR EVERY PRECAST AND PRESTRESSED USE

Look to Atlas for every type of form for precast and prestressed concrete. Atlas engineers welcome the opportunity to provide services in connection with mold requirements and usage, design methods, plant layout and all other forming problems.

PROMPT SHIPMENTS

SEND FOR BULLETIN AND DETAILS

	DOUBLE-TEE SLABS		GIRDERS
	I BEAMS		BRIDGE DECKS
	PILES		JOISTS

Consult Us Before Buying Forms for Prestressed or Precast Concrete

IRVINGTON FORM & TANK CORPORATION

20 Vesey Street New York 7, N. Y.

Colorado contractor's KOMPACTOR WORKS CLOSE-UP

eliminates all hand tamping costs!

"We're more than satisfied with the close compaction of the K-45," says Domenic Leone, referring to the excellent work the self-propelled K-45 Kompactor is doing on his $1,026,762.25 job on State Highway 1 in El Paso County, Colorado.

Domenic Leone Construction Company, Inc., Trinidad, Colorado, is compacting 1,722,000 cubic yards on 12.726 miles of highway south of Colorado Springs. Included are 6 concrete box culverts, 10′ x 12′, making close compaction a necessity.

Not only has the highly maneuverable K-45 eliminated hand tamping on culverts . . . it also averages 1100 yards an hour on banked material. Faster speeds, up to 5 mph, and its "interrupted pressure" principle of operation that directs *all* compaction effort downward, enabled Domenic Leone to replace several other pieces of compaction equipment with *one* K-45 Kompactor.

Write today for full information—or see your nearest Buffalo-Springfield distributor.

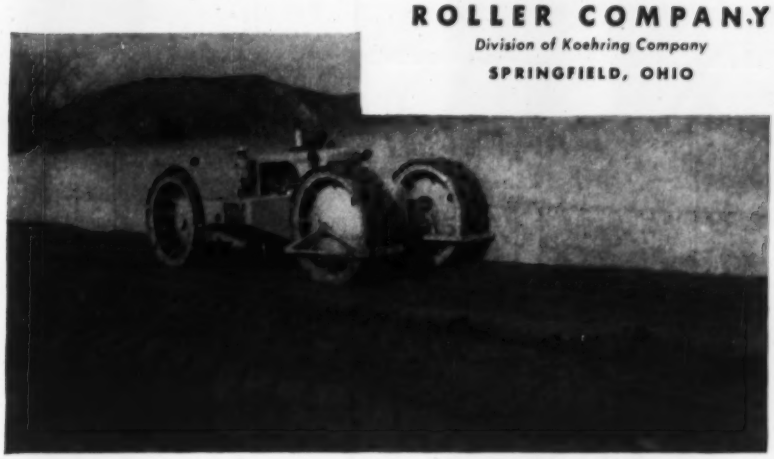
The Standard of Comparison

BUFFALO-SPRINGFIELD ROLLER COMPANY

Division of Koehring Company

SPRINGFIELD, OHIO

Here's how close the flexible K-45 can work to culverts and abutments, and it's faster, better, more efficient in the "wide open spaces" too.



a perfect fit!

The ingenious "Tyton Joint" is simple, speedy and sure. A specially designed rubber gasket fits into the bell end of the receiving pipe. The connecting pipe slides easily into place, compressing the gasket, which provides a tight and lasting seal.

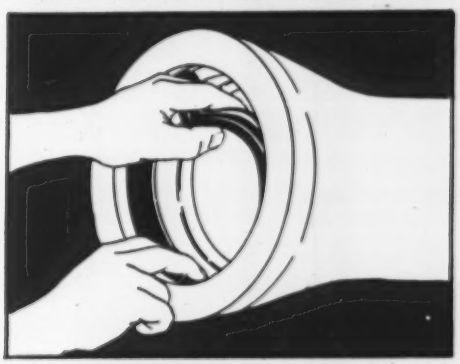
"Tyton Joint" is remarkably easy to install. No bell holes. Can be laid in rain or wet trench. Even an inexperienced crew masters the know-how quickly.

"AH WARNED ONCLE RAFE NOT TO STICK HIS HEAD IN, GRAN'MAW..."

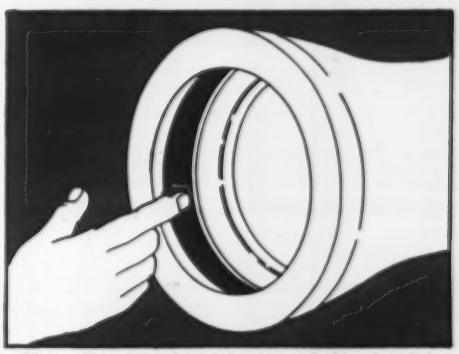
U.S. PIPE FOR WATER, SEWERAGE AND

U.S. TYTON JOINT

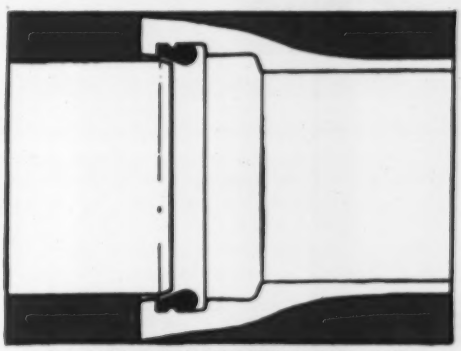
ONLY FOUR SIMPLE ACTIONS



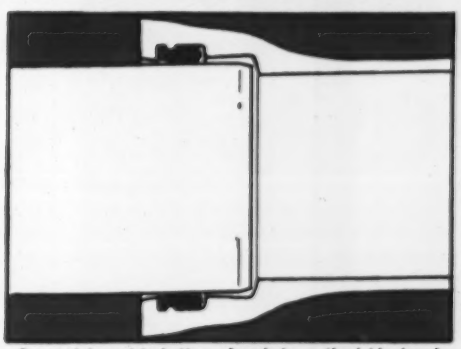
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket



Force plain end to bottom of socket . . . the job's done!

Get the facts on this new joint that saves time, trouble, money in the trench.

Call or write today.

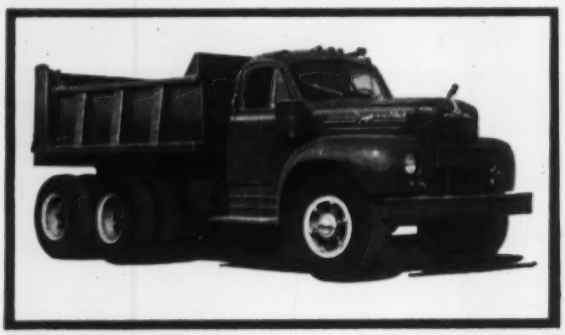
U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE

INDUSTRIAL SERVICE CAST IRON

B-60 SERIES—All-around workhorses for construction jobs everywhere. B-60 four- and six-wheel chassis are available for dumpers, concrete mixers, equipment hauling tractors, and flat-bed trucks . . . powered with Mack Thermodyne® gasoline or diesel engines in the 170 or 205 horsepower range.

B-80 SERIES—Largest and most powerful highway and off-highway chassis in the Mack line. B-80 tractors for heavy carry-all trailers and B-80 truck chassis for mixers and dumpers are available in four- or six-wheel models . . . powered with 170 to 205 hp Mack Thermodyne gasoline or diesel engines, or stock diesels in the 250 to 300 horsepower class.



B-40 SERIES—Widely popular for maneuverability and rugged strength. B-40 four- or six-wheel dumpers, mixers, flat-bed trucks and tractors are especially valued for their bonus capacities, economy, and handling ease. Powered by Mack 150 hp Thermodyne diesel or Magnadyne gasoline engines.

Most in demand . . . for the most demanding jobs

For dump, mixer, or flat-bed truck service in highway and off-highway hauling, Mack large-capacity trucks and tractors will do your toughest, most demanding jobs more efficiently, more economically, and more profitably. More, Mack offers you the widest selection of heavy-duty units with gross vehicle weights ranging from 25,000 to 65,000 lbs. and tractors for carry-all trailer service up to 175,000 lbs. G.C.W.

Have your local Mack representative give you complete details and specifications. Mack Trucks, Inc., Plainfield, New Jersey.
In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

4839

(Continued from page 138)

Mo.—**Massman Constr. Co.**, 608 Midland Bldg., 1221 Baltimore St., Kansas City, Mo. LB **$1,081,776.** (4 bidders) main river piers for Missouri River Bridge (Interstate 1), Boone and Cooper Counties.

Mo.—**Latta Bridge Co., Inc., Joseph E. Latta, Henry Parkinson Constr. Co., Grant Ward Constr. Co.**, 6609 Latta Place, St. Louis, Mo. LB **$276,291.** (5 bidders) two 62 ft., one 76 ft. continuous I-beam spans Sta. 723 plus 95, St. Louis City; LB **$344,747.** (5 bidders) one 55 ft., one 93 ft., one 35 ft. plate girder spans Sta. 702 plus 92, St. Louis Co. and St. Louis City; LB **$303,238.** (5 bidders) one 91 ft. girder spans Sta. 720 plus 43, St. Louis City. CD 2/8.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 3/1,

Mo.—**Fruin-Colnon Contr. Co.**, 1706 Olive St., St. Louis, Mo. LB **$1,340,455.** 76 ft. c. conc. 0.956 mi., city of St. Louis;

Mo.—**Grant Wood Constr. Co., Latta Bridge Co., Inc., Joseph Latta, Henry Parkinson Constr. Co.**, 6609 Latta Place, St. Louis, Mo. LB **$964,374.** (5 bidders) c. conc. 0.856 mi. St. Louis Co. and St. Louis City. CD 2/8.

▲† **Morrison-Knudsen Co., Inc.**, 319 Broadway Ave., Boise, Idaho and **Utah Constr. Co.**, 100 Bush St., San Francisco, Calif. CA **$6,191,206.** constr. 300 x 70 x 130 ft. rein.-con. power house Table Rock Dam power house and power switchyard, near Branson, Inv. 03-050-57-13, MISSOURI. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Jan. 15, awarded Jan. 28. CD 1/17, under LB.

† **Wilson Constr. Co.**, 535 "J" St., Lincoln, Neb. CA **$588,260.** SAGE facilities Grand Forks Air Force Base, ENG-25-066-57-24, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 12/14, under LB.

▲ **NEBRASKA**—State Dpt. Roads & Irrigation, Lincoln, Bids opened 2/28,

Neb.—**Abel Constr. Co.**, 1815 Y St., Lincoln, Neb. LB **$251,711.** FA-F-245-North Platte-McCook, grade, detour, culvert, soil aggregate b. conc.; LB **$374,953.** FA-F-391- and 484-Wakefield-Dakota City, Emerson north-grade, detour, pave guard granular fill bit. sand b. conc.;

Neb.—**Dobson & Robinson**, 823 First National Bank Bldg., Lincoln, Neb. LB **$647,146.** FA-F-268-Plainview-grade, detour, pave;

Neb.—**H. W. Johnson**, South Sioux City, Neb. LB **$396,758.** FA-F-72-Crofton-Hartington, grade, guard, granular soil aggregate armor, bit. bit. material; LB **$515,010.** FA-F-242-Bridgeport-alliance-grade, detour, culvert, guard, armor, granular fill, bit. and bit. material;

Neb.—**W. A. Biba Eng. Co.**, Geneva, Neb. LB **$371,732.** FA-S-49-Brewster-Taylor-grade, culvert, guard, armor, bit. sand; LB **$188,033.** FA-S-72 and 647-Palisades-Hayes Center, Hayes Center south, grading;

Neb.—**Peter Kiewit Sons Co.**, Omaha National Bank Bldg., Omaha, Neb. LB **$426,954.** FA-F-138 (21 and 18), Plattsmouth-Omaha Rd. near Oreapolis, grade, pave culvert, bridge guard rock b. conc.;

Neb.—**Roberts Constr. Co.**, 1018 Trust Bldg., Lincoln, Neb. LB **$419,966.** FA-S-246 and 585-Wahoo-Cedar Bluffs, Fremont-Cedar Bluffs, gravel, detour, subgrade, gradular sub. shoulder, b. conc.;

Neb.—**Missouri Valley Constr. Co.**, Grand Island, Neb. LB **$80,113.** FA-S-58 (4 and 5), Prousser south-soil aggregate asph. con.; LB **$471,908.** FA-F-435, Wayside-Chadron-grade, detour, culvert, guard, granular sub. crushed limestone, armor, b. conc.; LB **$97,928.** FA-S-523, Soldiers & Sailors Home eastgrade, culvert, soil aggregate b. conc.;

Neb.—**Robert M. Stump Constr. Co.**, Memphis, Neb. LB **$334,765.** FA-F-467-Lindsay-Creston-grade, grav. detour, guard, subgrade, granular soil aggregate shoulder b. conc. CD 2/19.

† **N. R. Hamm Constr. Co.**, Perry, Kan. CA **$501,297,** est. $537,959. channel, levees, appurtenances, Soldier Creek Diversion Unit, Sect. II, Topeka, Shawnee Co., Eng. 57-76, KANSAS. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City 6, Mo. Bids Feb. 27, awarded Mar. 1. CD 3/7, under LB.

Flint Hills Rurau Electric Co-operative Assn., O. E. Mabrey, mgr., Council Grove, Kan. Own Forces. **$855,000.** 59 mi. rural distr. lines, 10 mi. tie lines, 46 mi. lines to be converted to higher capacity, Kan. 27T Morris Co., KANSAS. CD 3/7.

▲ **Ottinger Constr. Co.**, Box 1917, Corpus Christi, Tex CA **$1,878,506.** rectification and imprvs. to Brays Bayou, 2,000,000 yd. excav, 45 drainage structures, conc. mattressess, clearing, grubbing 5 miles, Harris Co., TEXAS. U. S. Eng., Box 1229, Galveston, Tex. CD 2/8, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

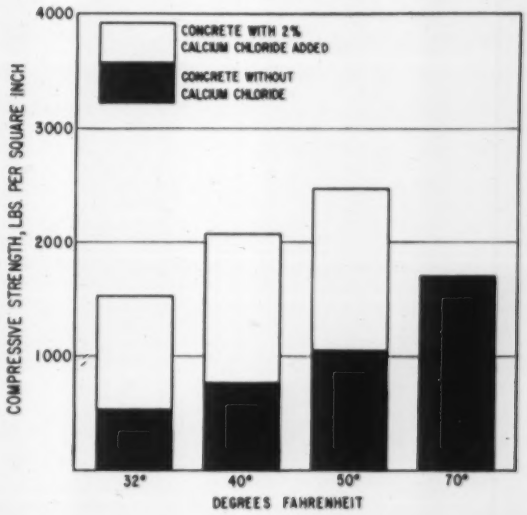
Harry Newton, Inc., Graham Land Office Bldg., Graham, Tex., CA **$1,211,416.** 0.08 mi. grading, structures and railroad grade separations on hy SH 550 Project I. 1082(11) Tarrant Co., Bids Feb. 14, awarded Mar. 4, CD 2/19, under LB.

Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, Tex. Purchase and Hire. **$500,000.** underground inter-city cable line-linking several cities in area, Cuero, TEXAS. CD 12/17/54.

▲† **J. M. Dellinger, Inc.**, Box 4227, Corpus Christi, Tex. CA **$1,787,000.** crosswind runway and taxiway, Naval Auxiliary Landing Field, NBy 1168, Spec. 1168/56, ALICE-ORANGE GROVE, TEX. Officer in Charge of Constr., Admin. Bldg. No. 1, Naval Air Station, Corpus Christi, Tex. Bids Feb. 19. CD 2/27, under LB.

Joe Bland Constr. Co., Box 1158, Austin, Tex., LB **$838,149.** Base Bid A, est. $100,000, domestic water distr. sys., AUSTIN, TEX. Travis Co. Water Control & Imprvt. Dist. 9, c/o Nash Phillips, Bd. Trustee, c/o 604 West Ave., Austin, Tex. Cameron Eng. Co., 604 West Ave., Austin, Tex., consult. engr. Bids Feb. 26, CD 2/18.

3 DAY STRENGTH OF CONCRETE AT VARIOUS TEMPERATURES



GRAPHIC PROOF!

Why you need SOLVAY CALCIUM CHLORIDE *when temperatures drop . . .*

Compare 3-day-old concrete with and without SOLVAY Calcium Chloride. At 32°F., the concrete containing calcium chloride is 222% stronger—at 40°F., 182% stronger—at 50°F., 141% stronger!* Similar gains are produced at 1, 2 and 7 days. By the addition of 2% low-cost SOLVAY Calcium Chloride to your mix you can maintain normal working schedules. Protection time is cut . . . every operation—finishing to form removal—moves on time.

In any season, SOLVAY Calcium Chloride gives you *better* concrete. It increases *both* early and ultimate strength. In addition, it permits reduction of water-cement ratio which results in denser, more moisture-and-wear-resistant concrete.

From Highway Research Board Proceedings

***SOLVAY CALCIUM CHLORIDE** speeds but does not change the normal chemical action of portland cement.* Its use in cold weather concrete is recommended or approved by leading authorities, including A.C.I. and P.C.A.

New handy 25 lb. bag • Easy to use • Assures accurate measure

Write for calcium chloride fact book at no cost!

SOLVAY PROCESS DIVISION

ALLIED CHEMICAL & DYE CORPORATION

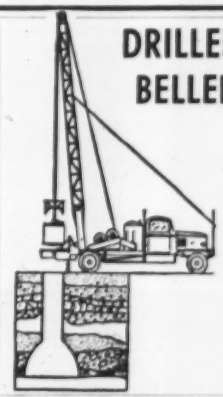
61 Broadway, New York 6, N. Y.

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit
Houston • New Orleans • New York • Philadelphia • Pittsburgh
St. Louis • Syracuse

Allied Chemical

SOLVAY ®



DRILLED PILING and BELLED CAISSONS | *consultants on foundation problems*

SHORING & BRACING, FORMATION TEST HOLES, ELEVATOR SHAFTS, DE-WATERING AND UNDERPINNING . . .

CAISSON SIZES . . . 16" to 84"
BELL SIZES . . . . . 2' to 15'
SHAFT DEPTHS . . . . . to 200'

CASE FOUNDATION CO.

Rt. 1, Roselle, Ill.

***Phone* (Chicago) . . . . . Austin 7-3384**

Write for Specifications

Moore Constr. Co., 125 Riverside Dr., P. O. Box 300, Austin 62, Tex., LB $53,248. Concrete ground water storage tank. (Austin, Tex.).
Pittsburgh, Des Moines Steel Co., 1215 Praetorian Bldg., Dallas, Tex., LB $53,350. Base Bid alternate C elevated steel water storage tank. (Austin, Tex.).

† **Wm. E. Goetz & Sons**, Box 7111, Sackberry Sta., San Antonio, Tex. CA $698,848. two BARRACKS, Naval Auxiliary Air Station, NBy 9022, BEEVILLE, TEX. Officer in Charge of Constr. Admin. Bldg. No. 1, Corpus Christi, Tex. Bids Feb. 21. CD 36, under LB.

▲ **Port Houston Iron Works, Shipbuilding Div.**, 7222 S. Harbor Dr., Houston, Tex. CA $2,750,000. constr. OFFSHORE BARGE, HOUSTON, TEX. Trans-Gulf Offshore Drilling, Inc., 3814 Harvey Wilson Dr., Houston, Tex. CD 3/8.

▲† **Wade Lahar Constr. Co.**, 5560 E. 56 St., Denver, Colo., LB $2,322,469. Phase 2, utilities, Air Force Academy, IFB 05-613-57-19, COLORADO SPRINGS, COLO. Dpt. Air Force, P. O. Box 1670, Colorado Springs, Colo. CD 8/5/54.

† **Geo. A. Rutherford, Inc.**, Box 771, Albuquerque, N. M. LB $577,584. community bldg. and dormitory, appurtenances, West Mesa Air Force Base, ENG-29-005-57-72, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 27. CD 1/23.

▲† **H. B. Zachry Co., Constr. Div.**, Box 10188, San Antonio, Tex. LB $1,718,124. Taxiways and aprons Holloman Air Force Base, ENG-29-005-57-51, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 28. CD 2/5.

BUILDINGS—LB & CA

General Electric Co., 840 S. Canal St., Chicago, Ill., CA $969,800. POWER PLANT, imprv., MUSCATINE, IOWA. City, City Hall, Muscatine, Iowa. Bids Feb. 13. Stanley Eng. Co., Hershey Bldg., Muscatine, Iowa, engr.

▲ **Universal Constr. Co.**, 1200 S.W. Blvd., Kansas City, Mo. CA Est. $3,000,000. general contract RESEARCH LABORATORY and OFFICE, 3 bldgs., brick, rein.-con. porcelain steel panels, on 25 acre site, NE Industrial Dist., Hawthorne Plant and Missouri River, KANSAS CITY, MO. Chemagro Corp., c/o Mr. Foster, local mgr., 5819 St. John St., Kansas City, Mo. Bids Feb. 14. CD 11/27, under Mo., North Kansas City.

▲ **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb. LB $2,186,813. Contr. No. 243, POWER HOUSE SCREEN HOUSE circulation water tunnels, and structures for outdoor electrical installations, OMAHA, NEB. Omaha Public Power Dist., 17 and Harney Sts., Omaha, Neb. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engr. A. G. Johnson, owner's ch. engr. Bids Mar. 4. CD 1/16.

▲ **T. C. Bateson Constr. Co.**, 6800 Denton Dr., Dallas, Tex. CA $3,063,800. construct and finance 200 HOUSING UNITS (Capehart), ENG-57-55, FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo. CD 3/7, under LB.

▲ **Archie C. Fitzgerald**, 2106 Breckenridge St., Austin, Tex., LB $1,357,000. Bid One WARD BLDG., Austin State Hospital, AUSTIN, TEX. Board for State Hospitals & Spec. Schools, Austin, Tex. Kuehne, Brooks & Bare, Perry Brooks Bldg., Austin, Tex., archts. Bids Mar. 5. CD 2/13;
J. J. Stokes, San Marcos, LB $1,181,181. Alternate Bid 3 (Austtin, Tex.).

▲ **Thomas S. Byrne, Inc.**, Fort Worth National Bldg., Fort Worth, Tex., CA Est. $1,000,000 (cost plus fixed fee) 1 story, masonry, concrete, steel, ENGINEERING BLDG., 100,000 sq. ft. floor space, FORT WORTH, TEX. A. H. & C. L. Rowan, 6100 Camp Bowie Blvd., Fort Worth, Tex. Convair will lease.

Vivrett & Pridham, Box 50051, Dallas, Tex., CA $576,099. Base Bid. 3 story, BANK and OFFICE, LAREDO, TEX. Laredo National Bank, Laredo, Tex. CD 1/23.

Herman Weber Inc., Box 329, Beaumont, Tex., LB $829,640 general contract JUNIOR HIGH SCHOOL, NEDERLAND, TEX. Nederland Independent School Dist., Nederland, Tex. Bids Feb. 26. CD 2/8.

Palmetto Village Building Co., 1412 S. Main St., Pasadena, Tex., and **Louis Silverman**, 3635 Drummond St., Houston, Tex., Owner Builds, $350,000. 20 DWELLINGS, $500,000 26 DWELLINGS, PASADENA, TEX.

▲ **Fluor Corp., Ltd.**, 2500 S. Atlantic Blvd., Los Angeles 22, Calif., CA $4,000,000 design and construct 16,000 bbl. per day low end point CATALYTIC REFORMING UNIT and desulfurization facilities, SWEENEY, TEX. Phillips Petroleum Co., Bartlesville, Okla. Constr. to start July 1.

LeBlanc, Inc., Box 351, Houston, Tex., CA $648,497 ELEMENTARY SCHOOL, 21 St. and 16 Ave., TEXAS CITY, TEX. Texas City Independent School Dist., Texas City, Tex. Bids Feb. 26. CD 2/13.

▲ **C. L. Browning, Jr.**, P. O. Box 606, San Antonio, Tex., CA $8,120,000, construct and finance permanent family HOUSING (Capehart), Inv. 25-066-57-9, CAMP CARSON, COLO., U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 1/22.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Calif., Sacramento**—AIR FORCE BASE—BA 4/3—U. S. Eng., 1209 8th St., concrete runway extension and widening for landing jet bombers at Mather Air Force Base, ENG-04-167-57-40. $7,000,000-$9,000,000. CD 11/16/55.

BUILDINGS—BA

† **Ariz., Fort Huachuca**—HOUSING—BA 3/28—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. housing (Increment No. 2), Army Electronic Proving Ground, Serial No. ENG 04-353-57-77, $800,000. CD 8/30.

HEAVY CONSTRUCTION—LB & CA

† **Cherf Bros., Inc. & Sandkay Contractors, Inc.**, Ephrata, Wash., CA $888,968. earthwork, structures for Royal Branch laterals, wasteways and drains, Block 85, Columbia Basin Proj. Spec. DC 4774, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Nov. 15, awarded Mar. 4. CD 11/21, under LB.

▲† **Alwood Corp.**, 203 E. Broadway, Burbank, Calif., LB $2,610,415. (6 bidders) San Antonio and Chino Creeks imprvs., San Antonio Dam to Holt Ave. CIVENG-04-353-57-31, CALIFORNIA. U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 6. CD 2/8.

▲ **MacDonald, Kruse and Pacific Allied**, 7605 Wheatland Ave., Sun Valley, Calif., CA $1,739,305, est. $3,000,000. Proj. No. 13, constr. Inglewood Ave. Century Blvd. storm sewers, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Feb. 15. CD 2/20, under LB.

BUILDINGS—LB & CA

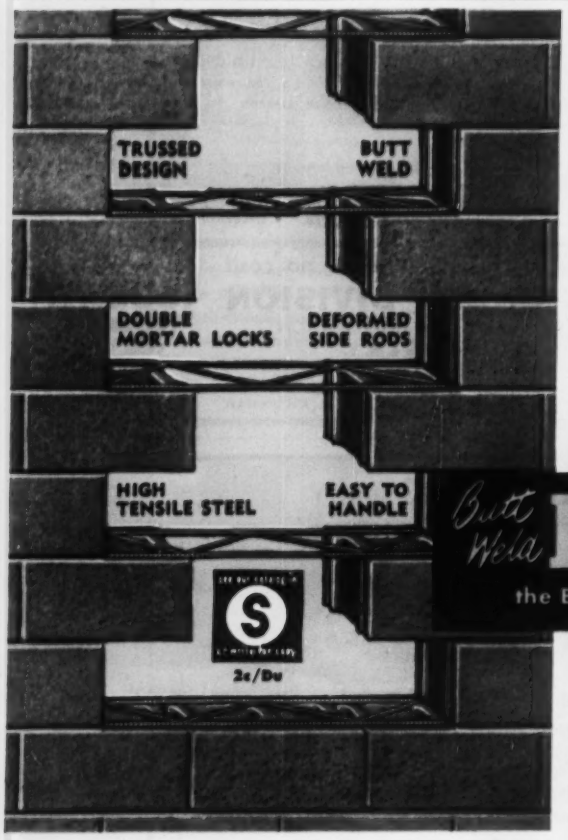
▲ **Del E. Webb Constr. Co.**, S. 23 Ave., Phoenix, Ariz., CA Est. $2,500,000. HEADQUARTERS BLDG., Third St. E. and Second S., SALT LAKE CITY, UTAH. Pacific Northwest Pipeline Corp., M & M Bldg., Houston, Tex. CD 2/25.

Paulsen Constr. Co., Box 2414, Salt Lake City, Utah. CA $519,000. general contract, Roosevelt SCHOOL ADDN., SALT LAKE CITY, UTAH. Bd. Educ., 440 E. First South St., Salt Lake City, Utah. Bids Feb. 26. CD 3/7, under LB.

▲ **J. P. Hopkins Co., Mercer Island, Wash. and Wick Constr. Co.**, 720 N. 35 St., Seattle, Wash., CA $1,526,696, est. $1,636,010, 108 Capehart family HOUSING units, Poulsbo, North Seattle, Midway Vashon, Winslow and Youngs Lake guided missile sites, Inv. 57-11, Seattle, WASHINGTON. U. S. Eng. 4735 E. Marginal Way, Seattle 4, Wash. Bids Jan. 8. CD 1/17, under LB.

▲ **C. L. Metcalf, Inc.**, 1515 W. Chapman Ave., Orange, Calif., LB $1,779,000 (7 bidders) Excelsior HIGH SCHOOL Increment No. 2, Norwalk, ARTESIA, CALIF. Excelsior Union High School Dist., 17923 S. Pioneer Blvd., Artesia, Calif. CD 1/2.

(Continued on page 146)



Specified and Available EVERYWHERE!

If an X-Ray picture were taken of a masonry wall, reinforced with Dur-O-waL, you would see the rigid steel at work. Dur-O-waL opens new opportunities for masonry design, assuring flawless beauty through the years. Get the facts about Dur-O-waL, offered by more than 8,000 dealers for prompt delivery everywhere.

Butt Weld DUR-O-WAL with RIGID TRUSSED Design
the Backbone of Steel for EVERY masonry wall

Call your nearest distributor or write Dept. 3-N for additional information

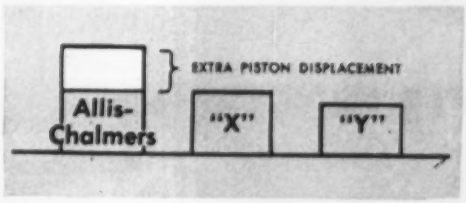
Dur-O-waL Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-waL Prod., Inc., Box 628, **SYRACUSE, N.Y.** Dur-O-waL of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-waL Products of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-waL Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-waL Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-waL, Inc., 165 Utah St., **TOLEDO, OHIO**

ALLIS-CHALMERS DIESELS OFFER

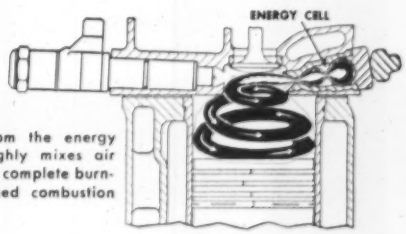
more USABLE power for your equipment

more PROFIT for you

You have a new kind of engine performance with Allis-Chalmers diesels. Their big piston displacement gives you greater reserve power, higher usable torque in the normal operating range. Their unique "follow-through" combustion results in highly efficient burning — builds up compression pressure slowly, sustains it over a longer period. Result: more *usable* power.



Allis-Chalmers' big piston displacement gives you extra usable power.



A blast from the energy cell thoroughly mixes air and fuel for complete burning, sustained combustion pressures.

Equipment must be *working* to be *earning* — Allis-Chalmers engines earn more because they are on the job working more. Rugged, simple construction, with fewer parts, means a minimum of maintenance. Get the complete story of why Allis-Chalmers engines give you more usable power, more profit. See your Allis-Chalmers engine dealer.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BE-9A

NOW...CALOREX BURNER PERFORMANCE

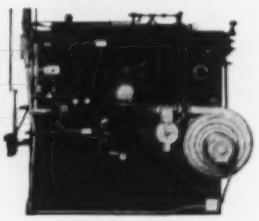
Comes in a Package!

Bolt on...and Save Fuel, Maintenance Costs!

Automatic firing of *any grade* of fuel oil...guaranteed combustion performance of 12½% CO_2, without smoke...fast, simple changeover to gas when more economical...labor savings that result from complete boiler room automation...

These are some of the Calorex advantages now easily available in CALOREX PLANNED-PACKAGE BURNERS. Standard models for practically every requirement of power and steam generation — heating — hot water — steam operated floating or mobile equipment.

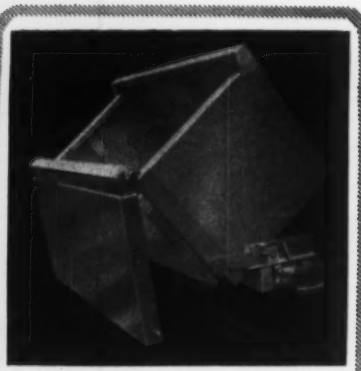
Let our engineers guide you in obtaining the exact model for top economy in your plant. Write today!



Fuel oil costs were cut nearly 1/3rd during the first year of operation of this Model R-200 Calorex Planned-Package Burner at a large uniform laundry-rental plant. Model made in two designs for both fire-tube and water-tube boilers.

CALOREX *planned-package* BURNERS

W. N. BEST COMBUSTION EQUIPMENT COMPANY
413 11th Street • Carlstadt, N. J.



MAYO Tunnel Cars

. . feature practical designs and rugged construction. All cars can be equipped with Mayo's *safe, automatic couplers.*

- *Side Dump Car* (shown) has 2½ cu. yd. capacity. 24" gage.
- *Rocker Dump Car.* Ideal for sticky muck or wet concrete. 1 cu. yd. capacity. 24" gage.
- *Tunnel Car.* Box body is removable and may be hoisted to surface to be dumped into truck. ½ to 2 cu. yd. capacity. 18" or 24" gage.

Write for free Bulletin No. 18 for full details

MAYO
TUNNEL and MINE EQUIPMENT
Lancaster, Penna.

FOUNDATION CONSTRUCTION BY

McKINNEY

DRILLING CO.
BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS

CAISSONS
DRILLED & UNDERREAMED
PIERS

WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB
ANYWHERE IN THE WORLD
OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C.

DUDGEON HYDRAULIC JACKS

SALES RENTALS
• CAPACITY TO 600 TONS

FOR:
PILE TESTING
•
UNDER-PINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING

Write to Dept. M

RICHARD DUDGEON INC.
709 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

(Continued from page 144)

▲ **E. E. Cunningham**, 126 Park Rd., Burlingame, Calif., CA $1,320,000. 100-unit garden APARTMENT, Tong Chinese Gardens, BELMONT, CALIF. Owner, c/o contractor.

▲ **Robert E. McKee**, 7000 Maintenance Rd., Los Angeles, Calif., CA $2,224,000. general work, 2 two story WARD BLDGS., two 1 story SECURITY WARD BLDGS., covered passageways to link bldg. and site development at Fairview State Hospital, COSTA MESA, CALIF. State Div. P. Wks., 1120 N. St., Sacramento, Calif. Bids Feb. 4, awarded Mar. 6. CD 3/5, under LB.

▲ **American River Jr. College Dist.**, 1333 Grand Ave., Del Paso Heights, rejected bids Feb. 26. 1 story, tilt-up concrete, wood frame ADMINISTRATION BLDG., SCIENCE MATHEMATICS, ENGINEERING BLDG. and LIBERAL ARTS BLDG., DEL PASO HEIGHTS, CALIF. LB $1,314,964. CD 2/26, under LB.

Richardson Bros., P. O. Box 172 Oceanside, Calif., LB $691,000; (5 bidders) 50,500 sq. ft., frame, stucco, Encinitas JUNIOR HIGH SCHOOL, Balcour Dr., ENCINITAS, CALIF. San Dieguito Union High School Dist., Santa Fe Dr., Encinitas, Calif. Raymond A. Jung, 631 Amphitheater Dr., Del Mar, Calif. archt. Bids Feb. 25. CD 2/21.

† **Diversified Builders, Inc.**, 1616 S. Greenwood Ave., Montebello, Calif., CA $563,300. MAGAZINE, Naval Ammunition Depot, NBy 7412, IFB 7412/568, FALLBROOK, CALIF. Dist. P. Wks. Office, Eleventh Naval Dist., San Diego 32, Calif. CD 8/28.

▲ **Morley Bldg. Co.**, 7700 Sunset Blvd., Los Angeles, Calif., LB $2,083,900 (5 bidders) 4 story, penthouse, LIBRARY BLDG., 2 story, bsmnt., MUSIC BLDG., 2 story, bsmnt., SPEECH-DRAMA BLDG. and site development, total floor area 218,000 sq. ft. at Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway Campus, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. CD 1/31;
West Coast Plumbing & Heating, 5715 W. Adams Blvd., Los Angeles 16, Calif., LB $517,778 (7 bidders) mechanical work (Los Angeles, Calif.);
Allen Eng. Co., 1245 Riverside Dr., Los Angeles 31, Calif., LB $345,200 (6 bidders) electrical work (Los Angeles, Calif.).

Beacon Constr. Co., 730 Clementina St., San Francisco, Calif., CA $849,000. OFFICE BLDG. No. 2 addns., alterations, SACRAMENTO, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. Awarded Mar. 4. CD 2/21, under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Dominion Engineering Works, Ltd.**, First Ave., Lachine, Que., CA design and construct 5 spherical valves at Chute des Passes power plant on Peribonca River, 145 mi. from Ile Maligne, QUEBEC. Aluminum Co. of Canada, Ltd., Sun Life Bldg., Montreal, Que. CD 8/15/50, under Unclassified.

Mannix Ltd., 322 7 Ave., S.W., Calgary, Alta., LB $410,050. Section "B"; LB $374,000 Section "C", clearing right-of-way for portion of Northern Ont. Section of all-Canadian natural gas pipe line from Manitoba-Ontario border to vicinity of Port Arthur, ONTARIO. Northern Ontario Pipe Line Crown Corp., c/o Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Mar. 1. CD 2/21;
Leo. Nixdorf, Kenora, Ont., LB $93,000 Section "A" natural gas pipe line (Ontario);
Patricia Transportation Co. Ltd., 122 Macdonald Ave., Winnipeg, Man., LB $97,525 Section "D" natural gas pipe line (Ontario);
Martin Schmid & Herman Rentz, Beardmore, Sask., LB $162,500 Section "E" natural gas pipe line (Ontario).

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **U. S. Eng.**, 4735 E. Marginal Way, Seattle 4, Wash., cancelled bids to have been opened Mar. 15, 37 mi. 7,200 volt overhead distr. lines to four Nike sites, Eielson Air Force Base, Inv. 57-31, ALASKA. CD 2/12.

† **Scheumann & Johnson**, Lloyd Bldg., Seattle 1, Wash., CA $815,915. rockfill dam and concrete spillway at Ketchikan Lake, excavating channel between Upper and Lower Ketchikan Lakes, intake structures, etc., for hydro project, KETCHIKAN, ALASKA. City, City Hall, Ketchikan, Alaska. Bids Feb. 8. CD 2/14, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ariz., Phoenix**—Deer Valley Utilities Co., 2040 W. McDowell Rd., water and sewerage system for privately-developed 9,800-acre project, industrial area. $7,000,000.

▲ **Mont., Great Falls**—City, City Hall, $2,300,000 bond election Apr. 1, water sys. extension imprvs. CD 3/14/52.

▲ **Okla., Okmulgee**—City, City Hall, bond election Apr. 15, WW extens. $1,975,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 6/29/55.

▲ **Tex., Daingerfield**—Northeast Texas Municipal Water Dist., c/o Marvin Watson, dist. pres., Daingerfield, water system. $2,650,000.

(Continued on page 149)

TANDEM SPREADING of the Asphaltic Concrete speeded the resurfacing work as . . .

Bitumuls and Asphalt Put New Life in Famous Ridge Route on U. S. Highway 99

IN JUNE OF 1956, a contract for one of the largest resurfacing jobs to date was let by the State of California Division of Highways. This contract called for more than half a million dollars of resurfacing on a 41 mile stretch of the Ridge Route (U.S. Highway 99) between Los Angeles and the Kern County Line.

Because various types of existing pavements were involved in this project, the requirements for asphalts and Bitumuls to be used in the resurfacing operations were quite complex. For instance, the job called for 21 miles of multi-lane Asphaltic Concrete resurfacing; 13 miles of sub-sealing, crack-sealing, and priming of old rigid-type pavements ahead of resurfacing; 8 miles of sealing and priming of existing bituminous 4-lane roadway; and extensive shoulder work.

To meet these requirements, the quantities of asphalt and Bitumuls required are impressive; for sub-sealing, 1,700 tons of Grade 10-25 Air Refined Asphalt; for resurfacing, 3,500 tons of 200-300 Penetration Paving Asphalt; for seal and prime work, 140,000 gallons of Bitumuls.

Timing and coordination vital

Successful bidder on the job was Schroeder & Co., Sun Valley, California. Completion of the work was scheduled for January 1957, so speed was essential. Also, close coordination was required between the Engineers on the job and the Field Representatives of American Bitumuls & Asphalt Co. (supplier of all bituminous materials) to assure accurate timing and delivery of specific types and quantities of these materials.

On the old rigid-type pavements, slabs were drilled and sub-sealed with Air Refined Asphalt. Cracks and joints were filled and sealed.

Asphaltic Concrete (Paving Asphalt mixed with ½ inch to ¾ inch maximum-size aggregate) was plant mixed and trucked onto the job where it was spread in two lifts, to provide a uniform 3 inch thickness. Using two spreaders equipped with special shoulder extensions, this mix was placed to a full width of 37 feet in a single pass.

The existing bituminous pavement required only a 1 inch overlay of Asphaltic Concrete, as opposed to 3 inches specified over the rigid-type section. Ahead of the placement of this 1 inch thickness, Bitumuls Slurry Seal was used to seal and prime the old surface.

All asphalts from a single source

This job, because of its unusual size and many complexities, provides an excellent example of the ability of American Bitumuls & Asphalt Co. to deliver a full line of asphaltic products to meet every need; and to furnish the on-job field-service that can often mean the difference between profit and loss. Whether your next project is a resurfacing operation or new construction, check with our office nearest you for *all* your asphalt requirements.

BITUMULS SLURRY SEALING ahead of resurfacing on the existing bituminous roadway.

American Bitumuls & Asphalt Company
200 Bush Street
San Francisco 20, Calif.

Pipe made from Beth-Cu-Loy offers economical ways to cross water

Building a road across a stream can be a challenge to the engineer with limited funds to work with. Yet the problem can be handled to produce a result that is functional, attractive and economical all at once! These photographs offer convincing proof.

Both of these installations took advantage of the superior qualities of pipe made from Beth-Cu-Loy galvanized steel culvert sheets. By "superior qualities," we refer, for example, to light weight which makes handling, shipping and installing easier and less costly. And we include the great strength which only steel possesses.

Then there is the flexibility of steel pipe, which permits conformation to grade and alignment, as well as the absorption of impact, vibration and freezing actions. And there's corrosion-resistance, for Beth-Cu-Loy is copper-bearing steel with the added protection of a heavy coating of rust-defying zinc.

Beth-Cu-Loy culvert sheets conform to the rigid specifications of the American Association of State Highway Officials. If you want additional details about Beth-Cu-Loy, or the names of some of the fabricators who use it in making drainage pipe, just get in touch with the nearest Bethlehem sales office or write direct to our general offices.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

(Continued from page 146)

SEWERS, WASTE DISPOSAL

▲ **Calif., Redwood City**—City, City Hall, sewage plant on East Shore Highway. $1,000,000. Glenn M. Jain, city engr.

▲ **Ind., Michigan City**—City, City Hall, pumping station, filter plant, sanitary sewers, office addn. and intake crib. $2,765,000. Boyd E. Phelps, Inc., 1000 Washington St., consult. engr.

▲ **Mass., Pittsfield**—City, sewage treatment facilities, pumping stations, trunk sewers, $3,500,000.

▲ **Tex., Midland**—City, City Hall, sanitary sewerage sys., $1,000,000.

BRIDGES

▲ **QUEBEC**—Provincial Dpt. P. Wks., Parliament Bldgs., Quebec City,

Iberville—steel, concrete bridge over River Richelieu, Iberville to St. Johns. $1,500,000. O. Desjardins, c/o owner, ch. bridge engr.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

Colchester and Marlborough—relocation of Route 2 (Blackledge River Section), controlled access highway, 2-lane, from Cooley Road to Mill Hill, median strip, 2 overpasses over Route 149 and New Haven R. R. at No. Westchester Interchange with Route 149. $5,000,000. F. P. Molloy, 10 N. Main St., West Hartford, consult. engr. CD 7/17.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,

Schoharie Co.—reconstr. approx. 6¾ mi., Rte. 145 between Rte. 7 in village of Cobleskill and Rte. 20 in Hamlet of Sharon, FAI Proj., $1,300,000.

reconstr. approx. ¼ mi. Rte. 30 at Breakabeen FAI Proj., $230,000.

▲ **RHODE ISLAND**—State of R. I. & Prov. Plants, Div. Purchase, State House, Providence,

East Providence—Wampanpag Trail reconstruction, East Providence, $1,050,000. Fenton G. Keyes & Assoc., 202 Washington St., Providence, consult. engrs.

▲ **QUEBEC**—Provincial Roads Dpt., Parliament Bldgs., Quebec City,

Drummondville—completing highway from Wickham to southern boundary of Bagot Co.; widening, grading highway between Acton Vale and Drummondville; grading and approaches to bridge over St. Francois River between river and Drummondville $100,000;

paving Route No. 20, Drummondville to St. Charles, $100,000.

Notre Dame du Bon Conseul—paving to width of 22 ft. on Blvd. Laurier, between Becancour River and Notre Dame du Bon Conseil, $500,000.

widening, grading, re-constr. pavement at approaches to bridge over St. Francois River over distance of 3 mi. at Notre Dame du Bon Conseil, $150,000.

Quebec City—repaving Sir Wilfred Laurier Hy. between Quebec Bridge and Jacques Cartier Bridge, $10,000,000. E. Gohier, c/o owner, ch. engr.

EARTHWORK, WATERWAYS

▲ **Tex., Galveston**—Texas Gulf Sulphur Co., c/o Houston Club Bldg., Houston, dredging 4 mi. ship channel, 200 ft. wide, 36 ft. deep, Galveston Bay, running from Houston Ship Channel to a Turning Basin 2 mi. NW of San Leon, near here. $2,000,000.

AIRPORTS

▲ **Calif., Los Angeles**—AIRFIELD—Bd. Supervrs. Los Angeles Co., 501 Hall of Records, 6,500 ft. runway, William J. Fox Airfield, Lancaster, Cap Proj 7441. $1,000,000.

▲ **Calif., Los Angeles**—AIRPORT IMPRVS.—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. Brackett Field, La Verne, Spec. 1742-DSD. Cap Proj. 7440. $1,202,218.

▲ **Iowa, Des Moines**—AIRPORT—City, City Hall, resurf. runways at municipal airport. $1,250,000.

▲ **Nev., Reno.**—AIRPORT TERMINAL—City, City Hall, plans by Vhay & Grow, 131 W. Second St., airport terminal, $1,000,000. CD 1/8/45.

LATIN AMERICA

▲ **Argentina, Buenos Aires**—AIRPORT—Argentine province of Missiones, Buenos Aires, plans first major airport "Aerodrome Posadas." $1,670,000.

▲ **Costa Rica, Limon**—SLAUGHTER HOUSE, etc.—Pappas Refrigeration Co., 600 Louisiana St., Houston, Tex., U. S. A., plans slaughter house and freezing plant, $1,000,000.

▲ **Venezuela, Caracas**—Ministry of P. Wks., Caracas, D. F., plans 2.5 mi. east-west avenue to be called Avenida Libertador, between Santa Rosa and Chacaito sections of city.

▲ **Venezuela, Maracaibo**—DOCK—Ministerio de Obras Publicas, Direccion de Puertos y Aeropuertos, Centro Simon Bolivar, Torre Sur, Caracas D. V., Venezuela, plans new 1,000 ft. dock and related installations in Maracaibo Harbor. $5,400,000. Sucre & Barrett, C.A., Edificio La Cieba, Piso 5, Sociedad a San Francisco, Caracas, D. F., Venezuela, engrs. Work to start in July.

▲ **Venezuela, Puerto La Cruz**—DOCK—Mene Grande Oil Co., Edificio Vulcania Ave., El Lago, San Bernardino, Caracas, plans Dock No. 5, at terminal. $1,000,000.

(Continued on page 152)

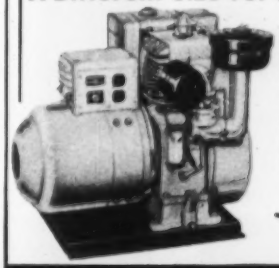
Power Plants Speed Construction

USE POWER TOOLS—FLOOD LIGHTS

WINPOWER PORTABLE ELECTRIC PLANTS

provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Wherever the job—whatever the need—you can count on a WINPOWER Electric Plant to meet your requirements.

A Different Size For Every Need



800 WATTS To 100 KW

All Standard Phases and Voltages

These rugged, heavy-duty 3-wheel dollies are used as a permanent mounting for 3, 4, and 5 KW electric plants where portability is desired by contractors, bridge builders, mine operators, road constructors, railroads, cities and municipalities.

Trailer-Mounted Floodlight Unit

MAKE NIGHT HOURS PAY with NITE-HAWK

Four 80,000 c.p. flood lights raise to 8½ ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breakers—fused circuits.

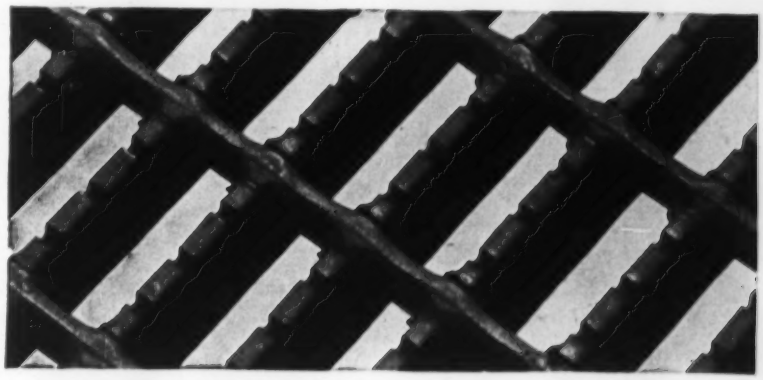
Tows at highway speeds on heavy-duty trailer with leaf springs—retractable caster wheel. This is the finest, most flexible unit available. 5 KW, 115 or 230 Volt.

Powered by Wisconsin 4 cylinder, air-cooled engine

WRITE FOR LITERATURE AND PRICES

WINPOWER MFG. CO.

Dept. G-53 Newton, Iowa



New Slip-Proof Design makes

Gary SERRATED GRATING safest

WHERE GOOD TRACTION IS IMPORTANT

Indoors or out, for area gratings in sidewalks, inclined walkways, fire escapes—wherever safe-footing is important, this one-piece, resistance-welded grating will provide safer working conditions. It's tailor-made to your requirements. Write for descriptive Catalog E-37

FREE SAMPLE

We'll send this handy paper weight if you request it on your company stationery.

ROCKWELL SPRING & AXLE CO.

Standard Steel Spring Division

4004 EAST SEVENTH AVE., GARY, INDIANA

The "mainline" belt system consists of 2 individual conveyors, each approximately 4,000 ft. long pulley to pulley, laid out to meet the irregular terrain. Successive loads from a continuous line of 35-ton dump trucks are required to keep the system feeding at its peak capacity.

Shown here is one of two 72" conveyor belts that carry rock and earth to the lakeside after it has been deposited in a surge pile by the mainline conveyor. These feeders transfer gravel to two recovery conveyors which can fill a 3,200-ton barge in only 15 minutes!

AN EARTH-MOVING EVENT

This huge 54" conveyor system—nearly two miles long and traveling at speeds up to 850 feet per minute—is the longest downhill conveyor of its kind ever built. Capable of transporting 75,000 tons of material a day, it was manufactured by Hewitt-Robins for Morrison-Knudsen Company, Inc., and is being used to haul 30,000,000 tons of rock and earth required for the foundation of a 13-mile roadbed now under construction across the Great Salt Lake for the Southern Pacific Railroad. The system is equipped with special Hewitt-Robins patented drive mechanisms which not only act as an efficient braking system for the long down-grade, but generate enough electricity to serve 4,000 average homes. The belting itself is more than 23,000 feet long and required for its construction a special Mount Vernon fabric which was delivered to Hewitt-Robins in record time.

This is another example of how fabrics made by Mount Vernon Mills, Inc. and the industries they serve, are serving America. Mount Vernon engineers and its laboratory facilities are available to help you in the development of any new fabric or in the application of those already available.

UNIFORMITY Makes The Big Difference In Industrial Fabrics

Mount Vernon Mills, inc.

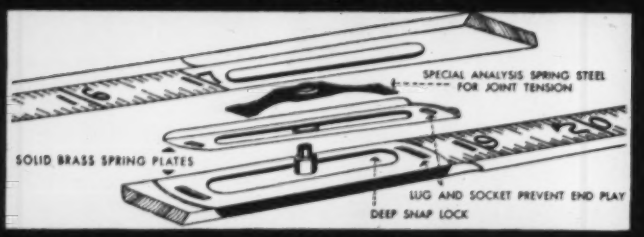
A LEADER IN INDUSTRIAL TEXTILES

TURNER HALSEY COMPANY Selling Agents

Main Office and Foreign Division: 40 Worth Street, New York, N. Y.

Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

WHY LUFKIN NEW Spring Lock Joints guarantee accuracy longer


SPECIAL ANALYSIS SPRING STEEL FOR JOINT TENSION
SOLID BRASS SPRING PLATES
LUG AND SOCKET PREVENT END PLAY
DEEP SNAP LOCK

Exclusive on "RED END" Folding Wood Rules

X-46 EXTENSION RULE
6" brass slide for inside measurements. 50% heavier wood for extra heavy duty.

066 — RED END RULE
All Red End features but without extension.

066-D ENGINEERS RULE
Red End quality, marked feet, 10ths and 100ths; and feet, inches and 16ths.

Exclusive Lufkin "Spring Lock" joints lock securely . . . eliminate end play . . . and maintain accuracy. Red End rules are straight-grained hard maple, tough and flexible. Bold black markings embedded in wood. Plastic coated for longer wear.

BUY LUFKIN
TAPES • RULES
PRECISION TOOLS
FROM YOUR SUPPLY STORE

THE LUFKIN RULE COMPANY
SAGINAW, MICHIGAN

BETTER MEASURE WITH LUFKIN 399

MORETRENCH WELLPOINT SYSTEM

Dependable Predraining That Speeds Work and Saves Money

MORETRENCH CORPORATION
Oldest, Largest, Most Experienced Predrainage Specialists
90 West St., New York 6, N. Y.
Chicago, Ill. Tampa, Fla. Houston, Tex.
Rockaway, N. J.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron
STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops: Eddystone, Pa.—Philadelphia, Pa. Royersford, Pa.

22nd St. & Washington Ave. Philadelphia 46, Pa. Main Office

New York Office 44 Whitehall St., N. Y. 4, N. Y.

GUNITE

Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air

We have the equipment, personnel and experience to complete any and all GUNITE work regardless of size or location.

Send for specifications and bulletins

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 WEST WALNUT, CHICAGO 12, ILLINOIS
3206 HOUSTON, HOUSTON 9, TEXAS
1508 PARKWAY DRIVE, ST. LOUIS 4, MO.
Milwaukee and Twin Cities Denver New Orleans

(Continued from page 149)

Frederick Snare Corp., Edificio La Boisa, Esquina La Boisa, Caracas, and New York, consult. engrs.

PUBLIC BUILDINGS

▲ **Ala., Talladega**—HOUSING UNITS—Talladega Housing Auth., Talladega, 98 low-rent housing units for Negroes. $1,068,331. Bids soon. CD 4/1/52.

▲ **Ariz., Tucson**—CAPITOL—State of Arizona, 17 and Adams Sts., Phoenix, branch capitol bldg. $1,000,000.

▲ **Calif., Menlo Park**—SCHOOLS—Portola Valley Elementary School Dist., c/o Principal, 775 Portola Rd., defeated Bonds Feb. 14, schools. $1,000,000. CD 12/13.

▲ **Calif., Campbell**—SCHOOLS—Cambrian Elem. School Dist., c/o Supt., 481 E. Casey Rd., bond election May 17, purchase and constr. 2 school sites and 2 schools. $1,450,000.

▲ **Calif., Daly City**—SCHOOLS—Jefferson Union High School Dist., 6996 Mission St., bond election Mar. 17, New Sharp Park High School and existing Westmore High School addns. $6,250,000. CD 1/8.

▲ **Calif., Inglewood**—SCHOOL—Inglewood Unified School Dist., Inglewood, defeated bonds Feb. 19, schools. $4,932,000. CD 2/11.

▲† **Calif., Lompoc**—MILITARY RESERVATION ALTERATIONS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, altering and construction at Camp Cooke Military Reservation for Air Force Training Center for Missile units. $25,000,000. Koebig & Koebig, 3242 W. 8 St., Los Angeles, and Holmes & Narver 751 S. Figueroa St., Los Angeles, consult. engrs.-archts.

▲ **Calif., Sacramento**—OFFICE—Sacramento Municipal Utility Dist., 2101 K St., Sacramento, plans by Dreyfuss & Blackford, 2127 J St., Sacramento, 3 story office, 14-acre site, near 61 and R Sts. $3,000,000. Ebasco Service, Inc., 2 Rector St., New York, N. Y., consult. engrs. Bids in the fall.

▲ **Calif., San Bruno**—SCHOOL—San Bruno Park Elem. School, c/o Supt., 500 Acacia Ave., bond election May 17, Crestmoor School. $2,000,000. Ernest Kump & Assocs., 450 Ramona St., Palo Alto, archts. CD 7/18.

▲ **Calif., San Diego**—CIVIC THEATER—City, Civic Center, 1600 Pacific Hy., $3,500,000 bond election Apr. 12, civic theater in Balboa Park. CD 11/9/56.

▲ **Calif., Santa Monica**—SCHOOLS—Santa Monica School Dist., Santa Monica, $10,500,000 special bond election June 4, constr. school bldgs. CD 10/27/50.

▲ **Calif., Saratoga**—SCHOOLS—Saratoga Elem. School Dist., c/o Supt., P.O. Box 247, bond election May 17, constr. 2 schools. $1,000,000. CD 1/18/52.

▲ **Fla., Gainesville**—HOSPITAL—Bd. Comrs., Alachua Co., Gainesville, plans by Goin & Moore, Gainesville, and Campbell, O'Kelly & May & Myrl Hanes, assoc. archts., Gainesville, "T" shaped 4 story, 2 bsmnt., rein.-con. frame, brick facing, Alachua General Hospital, $2,350,000. CD 3/4/55.

▲ **Ga., Atlanta**—CLASSROOM—Georgia Institute of Technology, 225 North Ave. N.W., classroom bldg. $2,500,000. CD 9/5/44.

▲ **Ind., Hammond**—SCHOOL, etc.—School City of Hammond, 5935 Hohman Ave., plans by Besozzi, Carpenter & Ignelzi, 7501 Indianapolis Blvd., 2 story, brick high school and gymnasium, 175 and Northcote Sts. $2,000,000.

▲ **Ill., Pana**—HIGH SCHOOL—Pana School Dist., c/o Supt. Schools, Pana, plans by D. Clarence Wilson, Mt. Vernon, high school, Over $1,000,000. CD 10/2.

▲ **Ill., Springfield**—SCHOOLS—City, City Hall, $1,960,000 bond election Apr. 2, two Junior High Schools. $1,960,000. CD 11/8/54.

▲ **Minn., Hopkins**—SCHOOL—Bd. Educ., L. H. Tanglen, supt schools, defeated proposal to issue $3,400,000 bonds Feb. 26 for constr. Junior High School, elementary school, addns. to two elementary schools. CD 2/21.

▲ **Mo., Kansas City**—LIBRARY, etc.—Bd. Educ., Library Bldg., Kansas City, Mo., plans by E. W. Tanner, 310 Ward Parkway, Kansas City, Mo., library and school administration office, Oak, McGee, 12 and 13 Sts. $5,000,000. CD 5/4.

▲ **N. J., New Brunswick**—DORMITORY, etc.—Rutgers University, College Ave., dormitory for Douglass College for Women, $2,000,000; student health center for men's colleges, $500,000. CD 3/8/51.

▲ **N. J., Somerville**—SCHOOL—Bd. Educ., Twp. of Bridgewater, Somerville, plans by William W. Seidel, 1 Elm Row, New Brunswick, high school, Bridgewater. $3,000,000.

▲ **N. Y., Amherst**—SCHOOL—Sweet Home Central School, Eggertsville, plans by Stanley C. Podd, 361 Delaware Ave., Buffalo, high school for towns of Amherst and Tonawanda. $2,800,000. CD 1/21.

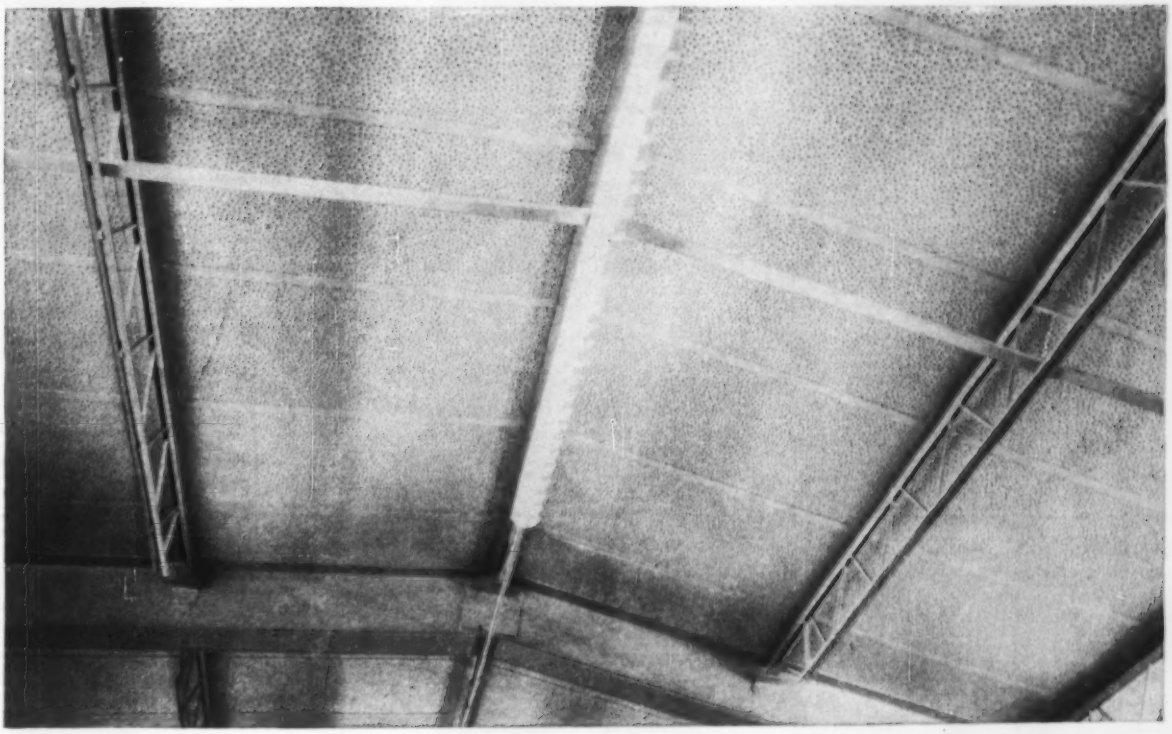
▲ **N. Y., Brooklyn**—HOUSING—New York City Housing Auth., 299 Broadway, New York, Zone 7, Samuel J. Tilden Houses, NY-5-34, on tract bounded by Dumont, Stone, Livonia and Rockaway Aves. $15,586,000. CD 6/22/55.

▲ **N. Y., Glen Cove**—SCHOOL—School Bd. plans by Frederic P. Wiedersum, 85 Hawthorne Ave., Valley Stream, Senior High School. $2,900,000. CD 8/4/54.

▲ **N. Y., New York**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Frederick G. Frost Jr. & Assocs., 144 E. 30 St., Zone 16, Proj. HO-214A, conversion of city hospital, Welfare Island to drug addict treatment center to be known as Riverside Hospital for Hospital Dpt. $1,700,000. To go ahead in 1957.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, Borgia Butler Houses

(Continued on page 154)



When you use the new Armstrong Acoustical Formboard with lightweight poured-in-place roof construction, you provide a ceiling that is both decorative and sound absorbing.

New Armstrong Acoustical Formboard provides an attractive finished ceiling that absorbs noise

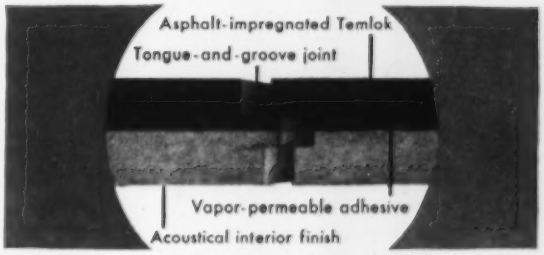
When you specify Armstrong Acoustical Formboard on your next lightweight roof deck job, you are giving your client maximum value for his building dollar. For Armstrong Acoustical Formboard, perforated with an exclusive full random design, gives him the extra advantages of decorative styling as well as noise-quieting efficiency.

As functional as it is handsome, this new formboard has a noise-reduction coefficient of .55 . . . it traps more than half the noise that strikes its surface. What's more, Armstrong Acoustical Formboard ranks high in insulation efficiency with a certified "C" value of 0.36 Btu at 75° F. mean temperature. Available in easy-to-handle 24″ x 48″ boards 1″ thick, it has a light-reflection value of 78% to help brighten interiors.

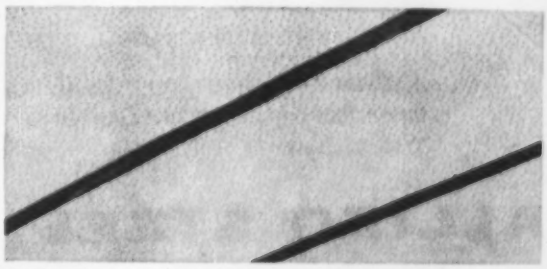
For a free booklet that gives you the complete story of Armstrong Acoustical Formboard, write to Armstrong Cork Company, 3803 Wallace Street, Lancaster, Pennsylvania, or call our nearest office.

Armstrong FORMBOARDS

Acoustical Formboard Insulation Formboard (T&G or Cut-to-Length)



High strength results from two-layer lamination. Vapor permeable insulation board and laminating adhesive allow free escape of moisture for slab curing. Special adhesive retains its strength when wet.



No splines or cross tees are needed with Armstrong Acoustical Formboard. Extra strong T and G joint will adequately support weight of roof deck. Narrow bevels give ceiling exceptionally clean appearance.

(Continued from page 152)

NY 5-37, tract bounded by E. 171 St., Park Ave., E. 169 St. and Webster Ave. $25,000,000. CD 6/22/55.

▲ O., Cincinnati—HOUSING—Cincinnati Metropolitan Housing Auth., 595 Armory St., plans by Pepinsky, Grau, Schrand, Union Trust Bldg., 375-units of housing in Winston Terrace Proj. $3,750,000. Wm. D. Ehler, Union Trust Bldg., and Larson-McKinney & Miller, 830 Main St., consult. engrs. CD 7/26/55.

▲ O., Greenfield—PLANT—City, City Bldg., municipal electric plant addn., alterations, $1,000,000. Willard C. Pistler, 4 W. 4 St., Cincinnati, consult. engr.

▲ Ore., Portland — CLASSROOM, etc. — Oregon Bd. Higher Educ., University of Oregon, Eugene, plans by Lawrence Tucker & Wallman, Failing Bldg., classroom bldg. and central heating plant at Portland State College, 1620 S.W. Park Ave., $1,050,000. CD 2/12.

▲ Tex., Corsicana — SCHOOLS — Corsicana Independent School Dist., c/o Robt. Ashworth, supt., Corsicana, plans by Preston M. Geren, 1607 Ft. Worth Natl. Bldg., Fort Worth, Junior High School, elementary school and 2 elementary school addns. $1,000,000. CD 7/25.

▲ Tex., Freeport—SCHOOLS—Brazosport, Ind. School Dist., Freeport, defeated bonds Feb. 23, Junior High and Elementary School addns., $2,500,000; Lake Jackson, $525,000; elementary school classrooms and cafeteria, West Freeport, $350,000; Junior and Senior High Schools and Administration bldg. addns, $600,000; athletic field, classrooms at Junior High, Clute, $375,000; elementary school and Junior, Senior and Elementary School alterations, Velasco, $650,000. CD 2/14-3/14/57.

▲ Wis., Milwaukee—TRUCK GARAGE—City, City Hall, 1 story, 206x416 ft., brick, concrete block, steel municipal truck garage. $1,200,000. Geo. C. Ashton, c/o owner, bldg. engr. CD 11/26/47.

COMMERCIAL BUILDINGS

▲ Ala., Birmingham—HOSPITAL—Children's Hospital, 712S. 30 St., plans by Lawrence Whitten, Brown-Marx Bldg., 200-bed hospital in University of Alabama Medical Center area. $3,000,000. CD 12/19/55.

▲ Calif., Berkeley—Y.M.C.A.—Young Men's Christian Assn., Allston Way and Milvia St., Y.M.C.A. bldg. $2,000,000.

▲ Calif., Claremont—PHYSICS, etc.—Pomona College Bd. Trustees Pomona College, Claremont, plans by Smith Powell & Morgridge, 208 W. 8th St., Los Angeles, 2 story, bsmnt., rein.-con. physics and mathematics bldg., 6th St. and College Ave. $1,000,000. Constr. in Spring.

▲ Calif., Long Beach—APARTMENT—Marina Towers Co-operative, c/o Killingsworth Brady & Smith, archts., 5833 Long Beach Blvd., 15 story, steel frame, concrete, Marina Towers Co-operative Apartment underground parking, 2 elevators and swimming pool. $2,000,000.

▲ Calif., San Francisco—CLINIC, etc.—Mary's Help Hospital, 145 Guerrero St., plans by Hewitt C. Wells, 165 Jessie St. 2 story, steel, concrete clinic and surgery bldg. $1,000,000. CD 4/25.

▲ Calif., Sunnyvale—HOSPITAL—El Camino Hospital Dist. Board Directors, 673 Carolina St., hospital. $4,000,000.

▲ Colo., Denver—OFFICE—Capital Investment Co., c/o Joe Lort Jr., engr.-archt., 211 Clayton St., 8 story, 6,000 sq. ft. each floor office bldg., E. Colfax and Grant Sts. $1,250,000.

▲ Conn., New Britain—REDEVELOPMENT AREA—New Britain Redevelopment Comn., City Hall, redevelopment of area bounded by East Main, Main, Elm and North Sts. $2,830,000, Candeub & Flessig, 331 Washington St., Newark, N. J., consult. engrs.

▲ Ill., Aurora—SCHOOL—Marmion Military Academy, 631 N. Lake St., plans by Belli & Belli, 8 S. Dearborn St., Chicago, 5 buildings for new boarding school on 250-acre campus, Butterfield Rd. $2,000,000.

▲ Ill., Melrose Park—SHOPPING CENTER, etc.—Winston Park Corp., 1011 Lake St., Oak Park, plans by Edwin Gerber & Assocs., 11 Commerce St., Newark, N. J. 40-unit shopping center and parking area, North Ave. between 9 and 14 Aves. $10,000,000.

▲ Iowa, Des Moines—SHOPPING CENTER—Bernard Greenbaum & Assoc., 59 E. Van Buren St., Chicago, Ill., Merle Hay Plaza Shopping Center, Merle Hay Rd. and Douglas Ave. $8,000,000.

▲ Mass., Cambridge—GYMNASIUM, etc.—Massachusetts Institute of Technology, 77 Mass. Ave., 1st sect., gymnasium, tennis courts, etc.; 2nd sect., rifle range, $1,000,000. CD 1/4/49.

▲ Mich., Bloomfield Hills—CONVENT—Society of the Sacred Heart, c/o Convent of Sacred Heart, 11515 Woodward St., Detroit, convent, Squirrel Rd. and Charing Way, $2,500,000.

▲ N. J., Camden—SCHOOL OF NURSING—Archdiocese of Camden, 721 Cooper St., and Our Lady of Lourdes Hospital, 1600 Haddon Ave., School of Nursing adjoining hospital on Haddon Ave. $1,159,000.

▲ N. J., Camden—HOSPITAL—Cooper Hospital, Sixth and Stevens Ave., two wings to existing hospital. $2,440,000.

▲ N. J., Camden—HOSPITAL—West Jersey Hospital, Mount Ephriam and Atlantic Ave., 5 story hospital addn. Mt. Ephriam Ave. $2,229,200. CD 3/24/50.

▲ N. J., Haddonfield—SHOPPING CENTER—Twentieth Century Constr. Co., Morris A. Sarkik, pres., Haddonfield, shopping center in Woodcrest Area 22 acre site, $2,500,000.

▲ N. J., Millville—OFFICE—Prudential Insurance Co. of America, 763 Broad St., Newark, plans by John A. Fletcher, 547 Landis Ave., Vineland, and Frank Grad, 11 Commerce St., Newark, 1 story, 40,000 sq. ft. regional office, Delsea Dr. and Sharp St. $1,000,000.

▲ N. Y., New York — HOSPITAL — Hospital Building Corp., 2396 Tiebout Ave., plans by Anthony J. DePace, 151 W. 46 St., Zone 19, 6 story hospital, Pelham Parkway South and St. Paul Ave. $2,500,000. CD 10/10.

▲ N. Y., Rockville Center—NOVITIATE—Nursing Sisters of the Sick Poor, c/o Mercy Hospital, North Village Ave., plans by Joseph Mathieu, 32 Court St., Brooklyn, novitiate and mother house. $1,000,000.

▲ O., Cincinnati—SHOPPING CENTER—Conrad Seyferth, 1458 Anderson Ferry Rd., plans by Martina & Miller, 2167 Florence Ave., 15-store shopping center, commercial bldg., Anderson Ferry and Delhi Park. $1,500,000. CD 7/23.

▲ O., Lorain — HOSPITAL — St. Joseph's Hospital, Sister Theophane, admin., Broadway and 21 St., plans by Geo. S. Rider Co., Terminal Tower, Cleveland, Zone 13, hospital addn., internes residences, nurses home, sisters residences, and chapel $3,000,000.

▲ Okla., Oklahoma City — DORMITORIES — Oklahoma City University, 2501 N. Blackwalder St., plans by Sorey Hill & Sorey, 809 N.W. 36 St., Oklahoma City, four 3 story dormitories, $1,600,000. Bids this month. CD 6/12/51.

▲ Okla., Oklahoma City—DOCTORS—J. LeRoy Smith, 3401 N. W. Highway, plans by Coston & Frankfurt, 323 E. Madison St., 7 story doctors building, adjacent to Baptist Hospital. $4,000,000.

▲ Pa., Bala-Cynwyd—APARTMENTS—Owner, c/o Samuel R. Oshiver, archt., 1913 Walnut St., Phila., 7 story apartment, 175 units, Belmont Ave. and Bala section, $3,250,000; 7 story apartment, 175 units, Conshohocken State Rd. in Cynwyd Section, $2,500,000.

▲ Pa., Chester—RESIDENTIAL DEVELOPMENT—Valley Green Development Co., 1518 Walnut St., Phila., residential development, 320 units. $5,000,000.

▲ Pa., Havertown — RESIDENTIAL DEVELOPMENT — Eugene Crown, 5603 Spruce St., Phila., residential development, 140 units, Township Line Rd., $2,000,000.

▲ Tex., Dallas—HOSPITAL AND LABORATORY RESEARCH UNIT, etc.—Baylor University Hospital, 5300 Gaston St., Dallas, plans by Thomas, Jameson & Merrill, 820 N. Harwood St., 7 story, masonry women's and childrens' hospital unit, incl. bsmnt., $3,500,000; research laboratory and hospital remodeling, $500,000. CD 12/30/54.

(Continued on page 156)

ALLIED

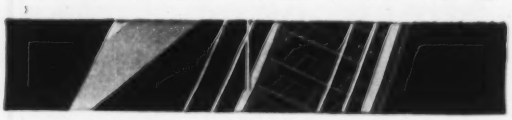
DESIGNERS
FABRICATORS
ERECTORS

OF MISCELLANEOUS IRON WORK
ARCHITECTURAL METALS
AND LIGHT STRUCTURAL STEEL

. . . INDUSTRIAL, INSTITUTIONAL AND COMMERCIAL INSTALLATIONS THROUGHOUT THE U.S.

ALLIED STEEL AND CONVEYORS

DIVISION OF THE SPARTON CORP.
17333 Healy Avenue • Detroit 12, Michigan
Cable Address: Alcon



GOFF KIRBY READY MIX COMPANY DISPATCHES TRUCKS BY RADIO, SAVES MONEY ON HAULING

Cleveland, Ohio Firm Operates 70 Trucks From Four Plants — Finds General Electric 2-Way Radio Helps Keep Costs Down!

Goff Kirby is one of Ohio's largest ready mix concrete firms. Its rolling stock is a familiar sight on construction projects throughout the Cleveland area. Last year, Goff Kirby Ready Mix Company was the only outside concrete supplier to deliver ready mix to the Ohio Turnpike project.

32 Trucks Have G-E Radio!

Nearly half the company's fleet is G-E radio equipped. These drivers are in constant contact with each of the four GK plants. Dispatch orders, changes, and special instructions by radio help make sure that loads get to a job on schedule. When breakdowns occur, the GK repair vehicle is on the scene in record time.

Radio Helps Keep Hauling Costs Down!

Edwin Harper, Goff Kirby president, reports that most of the cost of concrete is in the hauling charges. Typical rental of a concrete truck in his city is $11.50 per hour. By eliminating truck waiting time and driver overtime you save money. General Electric 2-way radio helps keep these costs down.

2-WAY MOBILE RADIO

Radio Can Help Your Operation, Too!

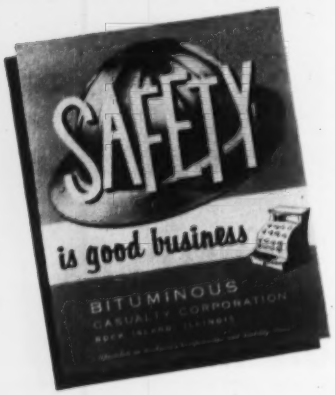
Goff Kirby is a typical example of progressive management in the concrete business. Your G-E Communications Counselor can tell you of others, show you how G-E Progress Line Radio can save you money. Call him in, or, write: *General Electric Company, Communication Equipment, Section C2737, Electronics Park, Syracuse, New York.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

FREE booklet
gives you proof that . . .

Safety is good business



You profit 4 ways

1 Lower insurance costs
2 Better employee morale
3 Increased efficiency
4 Improved public relations

Whatever your business — if you employ people — you profit 4 ways through accident prevention and safety education. Bituminous' new booklet, "Safety Is Good Business," shows how you profit and how you can cash in on safety in your own organization. Write for free copy.

BITUMINOUS CASUALTY CORPORATION
ROCK ISLAND, ILLINOIS
Specialists in Workmen's Compensation

(Continued from page 154)

▲ **Tex., Houston**—APARTMENT-HOTEL—Sterling M. Zindler, c/o Zindler's, 1019 Congress St., plans by Irving R. Klein & Assocs., 1317 Austin St., 10 story apartment-hotel, Grenbriar Dr. and Main St. $2,000,000.

▲ **Tex., San Antonio**—HOME FOR AGED—The Golden Manor, c/o Marmon-Mok Assocs., archts., 613 S. Texas Bldg., 9 or 10 story 183-unit home for the aged. $1,992,000.

▲ **Tex., Spring Branch**—DWELLINGS—F. Avanzini & Groes Bldg. Co., 114 Norview St., Houston, 50 dwellings, $1,500,000; 50 dwellings, $1,050,000; 50 dwellings, $900,000; all in 3rd sec. of Binglewood addn.

▲ **Tex., Wichita Falls**—TELEPHONE—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, downtown telephone bldg. $3,000,000.

▲ **Wis., Glendale**—DEPARTMENT STORE—Corrigan Properties, Inc., c/o Boston Store, lessee, 331 W. Wisconsin Ave., Milwaukee, 2 story, bsmnt, 170x200 ft. building at shopping center for department store. $2,000,000.

▲ **Que., Montreal**—OFFICE—International Building Ltd., 1470 Peele St., plans by Emery Roth & Sons, 525 Madison Ave., New York N. Y., 18 story, 3 bsmnt. levels, rein.-con., structural steel frame office bldg., 1325 Dorchester St. W., Over $1,000,000. Rueben Fisher, 3177 St. Sulpice Rd., assoc. archt.

▲ **Que., Seven Islands**—HOUSES—Iron Ore Co. of Canada, Ltd., 810 Cote de Liesse Rd., Montreal, 100 houses in west end of town. $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Mass., Cambridge**—GARAGE—Owner, c/o Albert J. Carpenter, archt., 236 Huntington Ave., Boston, 3 story, brick, stone public garage, Brattle St. $1,000,000. Constr. in 1957.

▲ **Mo., St. Louis**—PLANT—Crown Zellerbach Corp., E. J. Spiegel, vice pres., 111 N. Fourth St., plant for mfg. flexible packing materials on 50 acre site, adjacent to Lambert-St. Louis Municipal Airport, St. Louis Count/, for use by Western-Waxide Specialty Packaging Div. (Waxide Paper Co.), $2,000,000.

▲ **N. J., Trenton**—GENERATING PLANT—Public Service Electric & Gas Co., 80 Park Place, Newark, 300,000 kw generating plant on Duck Island, Hamilton Twp. $75,000,000.

▲ **Tex., Galveston**—PLANT—Texas Gulf Sulphur Co., c/o Houston Bldg., Houston, constr. offshore sulphur recovery plant, near here. $10,000,000.

▲ **Tex., Houston**—PARKING GARAGE—Hermann Estate, 6410 Fannin Bldg., plans by Hedrick, Stanley & Lightfoot, 5201 Fannin Bldg., substructure with aluminum skin and stone exterior, split-level, 370,000 sq. ft. self parking type garage. $1,500,000.

▲ **Tex., Tyler**—PLANT—Continental Can Co., Robert Gair Div. 105 N. Greenwood, Houston, or c/o Glenn Flynn, vice pres. Chamber of Commerce, Tyler, container mfg. plant (shipping type) 50-acre site Owentown near here. $2,000,000.

▲ **Utah, Magna**—POWER PLANT—Utah Copper Div., Kennecott Copper Corp., Kearns Bldg., Salt Lake City, 75,000 kw. addnl. to steam power plant. $16,000,000.

▲ **W. Va., Institute**—PLANT—Goodrich-Gulf Chemicals, Inc. Institute, rubber plant addn. $2,000,000.

▲ **Ont., Hamilton**—PLANT—North American Cyanamid Co. sub. American Cyanamid Co., 30 Rockefeller Plaza, New York 22, N. Y., U.S.A., plant to produce 52,000 tons anyhydrous ammonia and 66 tons urea per year. $5,000,000.

▲ **Que., Sorel**—FURNACES, etc.—Quebec Iron & Titanium Corp., c/o Kennecott Copper Corp., 161 E. 42 St., New York 17, N. Y., U.S.A., three furnaces and auxiliary equip. to produce titanium dioxide slag, $16,000,000. CD 10/25/51.

UNCLASSIFIED

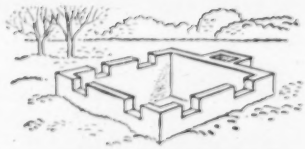
▲† **O., Cincinnati**—AIR CONDITIONING and LIGHTING SYSTEMS—General Services Admin., General Services Bldg., Wash. 25, D. C., air conditioning, lighting systems for Federal Building, 5 and Walnut Sts. $2,000,000. O. W. Motz, 920 E. McMillan St., consult. engr.

▲ **Ore., Eugene**—POWER LINES—Eugene Water & Electric Bd., City Hall, 5-year program underground power lines in downtown area, $1,500,000. Byron Taylor, c/o owner, engr.

▲ **Tex., Galveston**—DOCKING, etc.—Texas Gulf Sulphur Co., c/o Houston Bldg., Houston, constr. docking, holding and rail area, 600-acre tract between San Leon and Bayview, near here. Galveston Co. $3,000,000.

▲ **Tex., San Antonio**—STREET LIGHTING, etc.—City Public Service Bd., Navarroa and Villita Sts., street lighting "WhiteWay" $300,000; exten. regular street lighting, $200,000; addnl. modernization of traffic signal system, $240,000. 2nd electrical sub-station for Terrell Hills, $750,000; 4 electric sub-stations, $1,500,000; natural gas sys. expansion program, $3,431,000; gas belt lines extens., $225,000; replacing corroded gas mains, $1,000,000; cathodic protection program for gas lines, $190,000; remuning gas line services, $215,000; overhead electric power lines, $700,000; electric distr. transformers, $2,000,000; misc. gas and electric sys. imprvs. $446,000; CD 6/4/53.

▲ **Que., Granby**—LAKE—City, City Hall, artificial lake at east side of city. $1,000,000.



EFCO FORMS
for house foundations

EFCO Steel Forms for concrete construction are adaptable to wide use by their owners, including construction of house foundations. Other advantages:

- **Lifetime steel faces should never need to be replaced.**
- **Easy to handle and assemble.**
- **Saves time, material, money.**
- **Low original cost.**

Other forms from Economy are available on a rental basis. Write nearest office for catalog.

Economy Forms Corp.
DES MOINES, IOWA

Offices in St. Louis, Mo.; Kansas City, Mo.; Lincoln, Nebr.; Minneapolis, Minn.; Ft. Wayne, Ind.; Milwaukee, Wis.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Metuchen, N. J.; Rochester, N. Y.; Springfield, Mass.; Washington, D. C.; Decatur, Ga.; Charlotte, N. C.; Dallas, Texas; Tulsa, Okla.; Houston, Texas; Los Angeles, Cal.; Oakland, Cal.; Denver, Colo.

Kinnear Rolling Doors

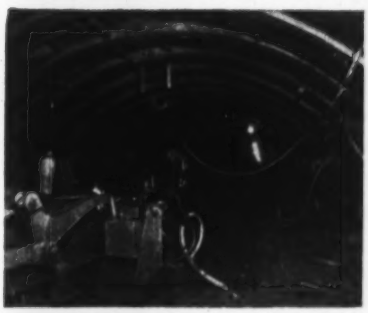
Kinnear Steel Rolling Doors *introduced the* **single-shaft torsion spring.** It assures *uniform* spring action . . . *uniform* regulation of operating ease from a **single adjustment wheel.** Many other special features make Kinnear your best door buy! Send for catalog!

KINNEAR ROLLING DOORS
Saving Ways in Doorways

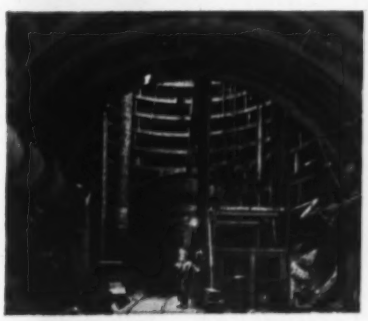
The KINNEAR Mfg. Co.
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

BENEATH THE SURFACE IN WASHINGTON, D. C.

SAFE TUNNELING IN MICA SCHIST



Liner plates reinforced with ribs carry roof loads and protect muckers cleaning up face of heading on upper bench.



Circular shaft lining is steel plates backed up with ribs. Note how shaft lining frames into steel support in the two tunnel bores running from shaft.

the job:

Section No. 3, East Branch, Piney Branch Trunk Sewer, Washington, D. C. Constructed by The Leo Butler Company, College Park, Maryland.

the problem:

To bore for over ⅓ mile in rotten mica schist rock a tunnel 19 feet in diameter 55 to 80 feet below the surface in a congested district where heavy city traffic must keep moving.

the solution:

From the bottom of a vertical shaft lined with steel liner plates and backed up with heavy circular ribs, horizontal tunneling by the bench method progressed. Every square foot of roof in the arch had to be supported, which to date has required over 20,000 Commercial Shearing and Stamping steel liner plates reinforced with ribs spaced on 2′ 8″ centers. Grout mixture had to be pumped in back of the liner plates to prevent air slacking and to solidify the ground before any progress could be made. Pressure grouting was needed ahead of the face.

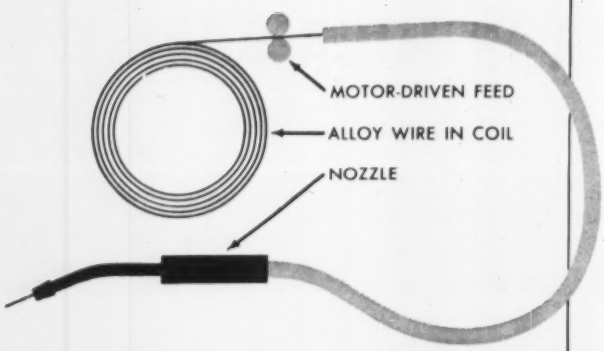
"We couldn't have dug ten feet of this project without plates. We needed inside flanges on these plates because I never would ask a man to slip a bolt through an outside flange . . . . the injury risk factor is too great. We couldn't have used any other type of flange as this kind of earth formation slides too quickly," states Mr. Clarence F. Sachs, construction superintendent.

All in all this is another of those real tough tunnel jobs . . . . sand, water, slimy muck, tremendous earth pressures . . . . all teaming up to cause real problems. It takes the best know how, good operators and the best known materials to lick this type of job. Here's where Commercial steel liner plates and ribs can be a job saver for you. For complete details on how Commercial liner plates and ribs can cut down time and increase the safety factor on your next job, write to Dept. E-12, The Commercial Shearing & Stamping Company, Youngstown, Ohio.

COMMERCIAL
shearing and stamping

WHAT IS *SEMI-AUTOMATIC* HARD-FACING?

Here is one of industry's newest maintenance tools used to radically reduce hard-facing costs. It is simple, highly versatile and can be installed at moderate price.



Semi-automatic hard-facing is a process which combines the high deposit rates of automatic welding with the positioning and setup convenience of the manual method. It utilizes a complete series of Stoody fabricated tubular wires containing alloys that meet all hard-facing requirements. These wires, supplied in layer wound coils, are mechanically fed to the nozzle by the semi-automatic welding machine. The weldor merely directs the arc as the metal is deposited on the work, the machine automatically starting the wire feed when the arc is struck, stopping it when the arc is broken. Numerous advantages result when rebuilding and maintaining equipment in all types of heavy industry.

Repointer welded on with Stoody Nickel Manganese and entire tooth hard-faced with Stoody 121

Roll brought up to size with Stoody Nickel Manganese and corrugations rebuilt with Stoody 100

HIGH WELDING SPEEDS—Two to four times faster than the manual method at correct welding amperages, semi-automatic hard-facing effects enormous savings in time. Penetration of the base metal and dilution of the deposit are reduced, with lower heat input, all highly desirable features of this process.

FULL VISIBILITY—No submerging flux is required; the weldor enjoys complete visibility of the weld at all times. Flux dams are unnecessary.

NO STUB END LOSSES—Wires are supplied in continuous coils. There is no stub end waste nor time lost in changing electrodes.

SEMI-AUTOMATIC MACHINES—Now supplied by a number of manufacturers, all can be used satisfactorily with Stoody semi-automatic wires with minor conversions consisting of wire guides, nozzle and nozzle tip. Conversion kits are available from all Stoody distributors.

WHERE CAN SEMI-AUTOMATIC HARD-FACING BE ECONOMICALLY USED?—In general, almost any work now hard-faced manually can be completed faster and cheaper semi-automatically with deposits having wear resistance usually superior to manual electrodes of similar analysis. The illustrations are typical of current semi-automatic applications.

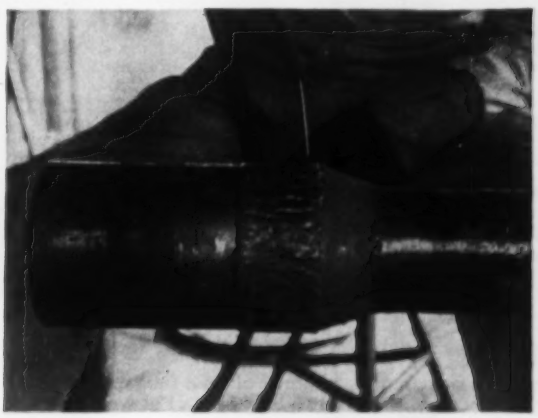
Write for circular. Contains a full description of present Stoody semi-automatic wires and typical applications.
Available from your Stoody dealer.
Check the "Yellow Pages" of your phone book or write direct.

Dredge pump casing hard-faced with a combination of Stoody 121 and Stoody 100

SEE OUR BOOTH NO. 144 WELDING SHOW PHILADELPHIA, APRIL 9-11

Shovel track pads rebuilt with Stoody Nickel Manganese

Mill hammers brought up to size with Stoody Nickel Manganese, using copper form, then hard-faced with Stoody 100



Tool joints hard-faced with Stoody 130 or Stoody 100

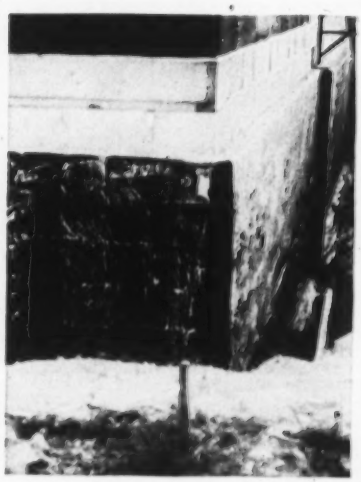
STOODY COMPANY
11976 EAST SLAUSON AVENUE
WHITTIER, CALIFORNIA

How to **keep water out** of concrete block foundation for life of building

Effective water-proofing of concrete block or concrete foundations has long been a builder's headache. Here is an inexpensive, simple, life-long solution:

1. Mop outer foundation wall with regular tar.
2. Apply 4 mil VISQUEEN film. For an 8 foot wall use 4 foot center fold to avoid seams. Drop film to bottom half of wall after application of top half.
3. Brush down to achieve tight fit.
4. Backfill. VISQUEEN film is inert and will last for the life of the building.

For the name of your nearest dealer write the VISKING Company.



VisQueen® film is all polyethylene, but not all polyethylene is VISQUEEN.
Only VISQUEEN has the benefit of research and resources of the VISKING Company.

VISKING COMPANY Division of Union Carbide and Carbon Corporation
PLASTICS DIVISION
World's largest producers of polyethylene sheeting and tubing
P. O. BOX EN3-1410 TERRE HAUTE, INDIANA
IN CANADA: VISKING[illegible], LINDSAY, ONTARIO

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 1 Connecticut
STREETS AND ROADS
March 26 Massachusetts April 1, 4 Connecticut

BUILDINGS—BA

▲ **Conn., Westport**—HIGH SCHOOL—BA 4/8—Town, School Bldg. Comn., Jessup Rd., high school, North Ave. $2,620,000. Plans deposit $75. Sherwood, Mills & Smith, 65 Broad St., Stamford, engrs. Extended date. CD 2/11.

HEAVY CONSTRUCTION—LB & CA

▲† **F. D. Rich Co., Inc.**, 550 Summer St., Stamford, Conn., CA **$1,714,400**. maintenance hangar and base supply warehouse, Bradley Field, ENG-19-016-57-62, WINDSOR LOCKS, CONN. U. S. Eng., 150 Causeway St., Boston, Mass. (Correction—price) CD 3/6, under CA.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **N. Y., Westhampton Beach**—STORAGE FACILITIES—BA On Or About 4/16—U. S. Eng., 111 E. 16 St., New York, Zone 3, addnl. storage facilities for ordnance storage area, Suffolk County Air Force Base, ENG-30-075-57-303. $1,000,000-$1,500,000. Plans deposit $50. CD 8/21.

▲† **Labrador, Goose Bay**—BUILDINGS, etc.—BA On Or About, 4/30—U. S. Eng., Eastern Ocean, 346 Broadway, New York 13, N. Y., air force building and utilities at Goose Air Force Base, ENG-30-347-57-20.

HEAVY CONSTRUCTION—LB & CA

▲† **Malan Constr. Corp.**, 2 Park Ave., New York 16, N. Y. CA **$5,133,000**. facilities for testing performance of jet-propelled aircraft at Naval Air Station, LAKEHURST, N. J. Dpt. Navy, Phila. Naval Base, Phila., Pa. CD 8/21.

▲ **Whiting-Turner Contg. Co.**, National Marine Bank Bldg., Baltimore 2, Md. LB Approx. **$1,500,000**. wind tunnels and attendant structures, MIDDLE RIVER, MD. The Glenn L. Martin Co., Middle River, Md. Sverdrup & Parcel, Inc., 1625 I St., N. W., Wash., D. C., engr.

BUILDINGS—LB & CA

▲ **University Towers Nos. 2 and 3, Inc.**, 163-18 Jamaica Ave., Jamaica, N. Y. Separate Contracts. **$5,100,000**. three 182 unit APARTMENTS, GARAGES, 122, 175 and 191 Willoughby St., BROOKLYN, N. Y. CD 1/9.

▲ **Messick Bros., Inc.**, 531 E. Commerce St., Bridgeton, N. J. CA **$1,684,884**. general constr. 1 and 2 story brick, block, steel SENIOR HIGH SCHOOL, incl. 9 bldgs., BRIDGETON, N. J. Bd. Educ., Bridgeton, N. J. CD 2/25, under LB.

▲ **Blueberry Hills Corp.**, Att. Bernard Levine, 1426 Walnut St., Phila., Pa. Separate Contracts. **$1,500,000**. RESIDENTIAL DEVELOPMENT, 115 units, Rte. 73 and Maple Ave., MARLTON, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Hampton Lakes Development Corp.**, Att. Robert I. Moss, P. O. Box 172, Vincentown, N. J. Separate Contracts. **$1,500,000**. RESIDENTIAL DEVELOPMENT, 100 units, Hampton Lakes, VINCENTOWN, N. J.

▲ **Blake Constr. Co.**, 33 E. St. S.W., Wash., D. C. LB **$2,548,000**. STATE OFFICE, ANNAPOLIS, MD. State, Dpt. Pub. Imprvts., 506 Park Ave., Baltimore, Md. Bids Mar. 12. CD 2/13.

▲ **William A. Berbusse**, 101 Park Ave., New York, N. Y. LB **$2,400,000** (7 bidders) 5 story HOSPITAL addn., NEW BRUNSWICK, N. J. Middlesex General Hospital, 180 Somerset St., New Brunswick, N. J. Bids Feb. 15. CD 2/8.

▲ **Princeton Constr. Co.**, 470 George Rd., New Brunswick, N. J. Owner Builds. **$2,000,000**. 65 HOUSES to be known as Princeton Manor on Terhurne Rd., PRINCETON, N. J. George Boylan, River Rd. Rte. 23, Highland Park, N. J., and Lewis Steuber, 2092 Morris Ave., Union, N. J., archts.

▲ **Barkley Homes, Inc.**, 4101 Passmore Ave., Phila., Pa., Separate Contracts, **$1,667,000**. 129-unit RESIDENTIAL DEVELOPMENT, Faulkland Heights area, WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 27 Louisiana, Mississippi
STREETS AND ROADS
March 27 Louisiana, Mississippi, Virginia

BUILDINGS—BA

▲ **Ga., Augusta**—SHOPPING CENTER—BA 4/9—Thomas J. Northcutt & Co., 3120 Maple Dr. N. E. Atlanta, Ga., Regional Shopping Center. $1,500,000. Plans deposit $50. Extended date. Heery & Heery, 1722 Peachtree St. N. W., Atlanta, Ga., archts. CD 1/28.

▲ **Ala., Fort McClellan**—HOUSING—BA On Or About 4/10—U. S. Eng., 2301 Grant St., Mobile, Zone 7, Phase II, 200-units of Capehart Housing Serial No. ENG-01-076-57-74. CD 8/18/55, under Public Buildings.

▲ **Ky., Louisville**—HOUSING—BA 4/11—Louisville Municipal Housing Comn., Second and York Sts., Southwick Housing, 1 and 2 story, concrete slabs, brick veneer bldgs., 496 units, $5,000,000. Hartstern, Louis & Henry, McDowell Bldg., archts. E. R. Ronald & Assoc., 554 S. Third St., engrs. CD 1/23/56.

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Road Dpt., Tallahassee, Bids opened 3/7,

Fla.—**Duval Eng. & Constr. Co.**, Box 1588, Jacksonville, Fla., LB **$256,635** (4 bidders) limerock stab. base, small drainage structures 11.292 m. SR S-108, Job 451-175 and Job 7452-176 Nassau Co.; LB **$221,861** (4 bidders), limerock stab. base, surf. tr. 15 ft. concrete slab deck bridge quadruple box culvert 8.578 mi. SR S-121, Job 7455-179, Nassau Co.;

Fla.—**Coggin & Deermont**, Chipley, Fla., LB **$139,347** (4 bidders) sand-clay base, wid'n. strips sand-ash. hot mix leveling course with b. conc. surf. course 3.208 mi. SR 85, Job 5705-109 Okaloosa Co.;

Fla.—**R. H. Wright & Son, Capelett Bros., Inc., Andy's Truck Service Inc., Joe Daniel Inc & Seminole Quarries Inc.**, Fort Lauderdale, Fla., LB **$2,705,578** (5 bidders) limerock base, b. conc. 2 dual bridges, 1 single frontage road bridge, 6 span frontage road crossover bridges 11.636 mi. SR 826, Job 8726-103, Dade Co.;

Fla.—**Cadell & Jackson**, Box 2217, Jacksonville 3, Fla., LB **$464,551** (4 bidders) grading, medium borrow excav., limerock base 7.165 mi. SR 20, Job 3802-105 Taylor Co.;

Fla.—**Troup Bros., Inc.**, Box 168, Miami 33, Fla., LB **$315,569** (11 bidders) limerock base with b. conc. and binder, 1 box culvert, 3.506 mi. SR 5 (US 1), F-003-4 (21) Job 8901-205, Martin Co.;

Fla.—**Faulk & Coleman Constr. Co.**, Woodville Hy. Tallahassee, Fla., LB **$299,987** (4 bidders) sand bit. road mix 12.372 mi. SR 30, S-174 (6), (Job 5911-202) Wakulla Co.;

Fla.—**J. W. Conner & Sons, Inc.**, Box 2522, Tampa, Fla., LB **$674,999** (4 bidders) limerock base, b. conc. surf. course with binder, 288 ft. bridge 7.396 mi. SR 582, Job 1029-101, Hillsborough Co.;

Fla.—**Rea Constr. Co.**, Box 3725, Charlotte 3, N. C., LB **$199,952** (5 bidders) b. conc. leveling course with b. conc. 24.213 mi. SR 249 Job 3704-801, Suwannee Co.;

Fla.—**Belcher Oil Co.**, Box 227, South Miami 43, Fla., LB **$864,556** (5 bidders) limerock base with b. conc. and binder, 120 ft. bridge, 9.573 mi. SR 710, Job 9331-102, Palm Beach Co. CD 2/25.

▲† **B. B. McCormick & Sons, Inc.**, P. O. Box 248, Jacksonville Beach, Fla., CA **$1,631,412**, water supply elevated tank and distr. lines at Air Force Missile Test Center, Patrick Air Force Base, ENG 08-123 (57-23), COCOA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. CD 8/23.

BUILDINGS—LB & CA

▲ **H. L. Coble**, 1705 Battleground Ave., Greensboro, N. C., **Nello L. Teer**, Trust Bldg., Durham, N. C., and **W. H. Weaver**, 214 W. Gaston St., Greensboro, N. C. LB **$18,197,000**. construct and finance 1,500 HOUSING UNITS, (Capehart), Seymour Johnson Air Force Base, IFB 31-610-57-57, GOLDSBORO, N. C. Base Procurement Office, Building 905, Seymour Johnson Air Force Base, N. C. Bids Mar. 5. CD 1/24.

▲ **Farnsworth & Chambers Co., Inc.**, 3018 Leeland St., Houston, Tex. CA **$2,391,348**. 10 story Heidelberg HOTEL addn., BATON ROUGE, LA. A. C. Glassel, Captain Shreve Hotel, Shreveport, La. CD 12/6, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 2, 3 Michigan
STREETS AND ROADS
April 3 Michigan

▲ **ILLINOIS**—BA 4/4—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

Contract T-2-A, paving, appurtenances precast concrete structural steel bridges 2.59 mi. from N. E. of Midlothian to point N. W. of 131 and Crawford Ave. in Alsip, $2,750,000. Porter, Urquhart, McCreary & O'Brien, 415 Frebuysen Ave., Newark 5, N. J., section engrs.

Contract T-5-A, grading, drainage, paving appurtenances precast concrete steel bridges 5.4 mi. from intersection of 71 and Wolf Rd. N. of Willow Springs to 31 St. and Cook and DuPage County Line N. of Hinsdale, $4,000,000, Harza Eng. Co., 20 N. Wacker Dr., Chicago, section engr. CD 5/11.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago, Bids opened 2/7.

M. J. **Boyle & Co.**, 2480 Elston Ave., Chicago, Ill. and **Ryan Constr. Co.**, 800 E. Michigan St., Evansville, Ind., CA **$7,662,340**, Contr. T-7-A, grading, drainage, paving, precast concrete steel bridges 4.75 mi. N. of Rte. 20, Mt. Prospect, Cook Co. CD 2/14, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago,

ISTHC—**Material Service Corp.**, 300 W. Washington Blvd., Chicago, Ill., CA **$2,860,348**, contr. PNI-2, manufacturing, del., precast prestressed concrete girders.

ISTHC—**Raymond Concrete Pile Corp.**, 140 Cedar St., New York, N. Y., CA **$2,541,170**, contr. CNI-1 furnishing, erecting, del. shell-encased concrete units to support bridges at 80 bridge sites, CD 3/1, under LB;

ISTHC—**E. A. Meyer Constr. Co.**, 1539 Morow Ave., North Chicago, Ill., and **Eric Bolander Constr. Co.**, Winchester Rd., Libertyville, Ill., CA **$4,546,998** Contr. T-13-A, grading, paving, drainage, appurtenances, precast concrete bridges from near Belvidere Rd. N. to Town Line Rd. 4.85 mi. Lake Co. Bids Feb. 21, awarded Mar. 8. Grand total $9,948,516. CD 2/28, under LB.

▲ **ILLINOIS**—Illinois Toll Highway Comn., 20 N. Wacker Dr., Chicago,

ITHC—**Allied Structural Steel Co.**, 20 N. Wacker Dr., Chicago, Ill., CA **$1,769,235**, Contr. ST-1, furnishing, fabricating, erecting 6,330,000 lb. girder spans, across Ashland South Park and Wood Aves. in addition to railyards on Tri-State Route;

ITHC—**Bethlehem Steel Co.**, Prudential Plaza, Chicago, Ill., CA **$5,707,850**, Contr. SNI-4, furnishing, fabricating, del. 22,557,000 lb. girder and beam spans for 21 bridges on Tri-State Tollway; CD **$1,166,923**, Contr. SNI-5, furnishing, fabricating, del. 4,388,000 lb. girder and beam spans for 5 structures, 3 on Tri-State Tollway and 2 on East-West Tollway. Bids Feb. 28, awarded Mar. 8. Grand total, $8,644,008. CD 3/6, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago, Bids opened 3/7,

American Marietta Co., 101 E. Ontario St., Chicago, Ill., LB **$2,899,713**. Contract No. PNI-4 manufacturing, furnishing, del. 115,900 lin. ft. pre-cast, prestressed concrete girders and 5,545,000 lin. ft. prestressing wire strand 7/16 in. in diam. to 51 Tri-State Tollway structure sites. Bids Mar. 7. CD 5/11.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing, Bids opened 3/6,

Mich.—**Sargent Constr. Co.**, 2840 Bay Rd., Saginaw, Mich. LB **$2,237,097**, est. $2,340,000 (20 bidders) dual 22 ft. c. conc. 8.97 mi. on relocation of US-127 and 21 ft. prime and double seal 5.468 mi. on West Service Rd. from Leslie northerly, M 33031 C1-RN, etc Ingham and Jackson Counties;

Mich.—**General Paving Constr. Co.**, 235 Union Ave. S.E., Grand Rapids, Mich., and **The Taber Co.**, 125 Front St. N.W., Grand Rapids, Mich. LB **$228,128**, est. $230,000. (8 bidders) b. conc. on 3 sections of M-91 and M-57 from west city limits of Greenville to M-91, M 34011 C1-U (SP 34-38), etc. Ionia and Montcalm Counties;

Mich.—**Rieth-Riley Constr. Co.**, 817 Emmett St., Battle Creek, Mich. LB **$859,599**, est. $970,000. (18 bidders) single and dual 22 ft. c. conc. 5.462 mi. US-131 from M-216 north to Schoolcraft and 0.752 mi. work on relocation of N. Y. Central R.R. tracks, M 39011 C5-RN (SP 39-1), etc., Kalamazoo and St. Joseph Counties. CD 2/28.

BUILDINGS—LB & CA

▲ **Clearing Industrial Dist., Inc.**, 6455 S. Central Ave., Chicago, Ill., CA **$1,500,000**. 1 story, 150,000 sq. ft. WAREHOUSE and OFFICE, 2045 N. Cornell St., MELROSE PARK, ILL. Graybar Electric Co., 850 W. Jackson Blvd., Chicago, Ill.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—LB & CA

▲† **Allis-Chalmers Mfg. Co.**, 1126 S. 70 St., Milwaukee, Wis., CA **$10,282,740**. hydraulic turbines, Oahe Reservoir Proj., near Pierre, Inv. 25-066-57-29, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Jan. 8. CD 1/18, under LB.

▲† **Lawless & Alford, Inc.**, Box 600, Austin 63, Tex., LB **$3,084,095**. constr. academic bldg. and flight laboratory and utilities, Brooks Field, ENG-41-243-57-15, SAN ANTONIO, TEX. CD 2/12.

▲† **E. V. Lane Corp.**, 2675 Park Blvd., Palo Alto, Calif. CA **$2,794,115**. altering existing control shaft, construct foundations for second power plant, rehab. 14 mi. railway track at Fort Peck Dam, Valley Co., MONTANA. U. S. Eng., Fort Peck, Mont. Bids Feb. 7, awarded Feb. 27. CD 2/13, under LB.

BUILDINGS—LB & CA

▲ **Standard Constr. Co.**, 250 Builders Exchange Bldg., Minneapolis, Minn. CA **$1,827,480**. general constr. HIGH SCHOOL addn., SILVER BAY, MINN. Bd. Educ., W. H. Norlen, clk., Silver Bay, Minn. CD 1/29, under LB.

▲ **Millstone Constr. Co., Inc.**, 8510 Eager Rd., Brentwood 17, Mo. CA Est. **$2,500,000**. suburban DEPARTMENT STORE in Crestwood Plaza area adjacent to U. S. No. 66 to provide sales, offices, etc. for both companies, CRESTWOOD (ST. LOUIS 23 P. O.), MO. Scruggs-Vandervoort-Barney, 10 and Olive Sts., and Mermod-Jaccard King, 900 Locust St., St. Louis, Mo.

▲† **Green Constr. Co.**, Ulrich Bldg., Manhattan, Kan. CA **$1,770,494**. remodel and modernize BARRACKS and MESSHALLS, FORT RILEY, KAN. Procurement Office, Fort Riley, Kan. CD 1/9, under LB.

Helps The Hand Of An Idea Man

Busy hands working with the versatile CASTELL LOCKTITE pencil . . . turning out products and projects that make America prosperous.

Ask them about LOCKTITE. They'll tell you they like the gun-rifled clutch which grips the lead like the jaws of a bull dog. They'll tell you they like the convenience of TEL-A-GRADE 9800 which identifies the degree at a glance. They'll tell you they love the rich, graphite-saturated imported CASTELL 9030 lead.

The modern Pros go for LOCKTITE. If you're an idea man, you will, too. Try one today and see.

A.W. FABER - CASTELL
PENCIL COMPANY INC. NEWARK 3, N. J.

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

TEST BORINGS
for
• COAL
• MINERALS
• DAMS & BRIDGES
• BUILDINGS
We put it on the bench
PENNSYLVANIA Drilling CO.
DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
April 10 California

STREETS AND ROADS
April 10, 11 California

▲† **Ariz., Chandler**—FIRING-IN-BUTT—BA 4/10—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. firing-in-butt and runway reconstr., Williams Air Force Base, Serial No. ENG-04-353-57-81. $3,000,000. CD 8/23.

▲† **Washington**—BA 4/30—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 230 ft. high rock-fill Eagle Gorge flood control dam on Green River with sand and gravel core, Kanasket, Inv. 57-44. Plans deposit $100. CD 2/1, under LB.

BUILDINGS—BA

▲ **Ore., Pendleton**—SCHOOL—BA 4/2—Pendleton School Dist. No. 16 C, Pendleton, high school. $2,000,000. Culler, Gale, Marell & Norris, Realty Bldg., Spokane, archts. Extended date. CD 3/4.

▲ **Calif., Los Angeles**—RESIDENCE HALL—BA 4/4—University of California, 405 Hilgard Ave., constr. Clarence Dykstra Residence Hall. $3,000,000. Plans deposit $300. Extended date. Welton Becket & Assocs., 5637 Wilshire Blvd., archts. CD 2/13.

HEAVY CONSTRUCTION—LB & CA

▲† **General Constr. Co.**, 3840 Iowa St., Seattle, Wash., LB $1,967,180. est. $1,631,902 (3 bidders) Shilshole Bay Breakwater, Seattle, Inv. 57-46, WASHINGTON. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Mar. 12. CD 2/12.

▲† **Guy F. Atkinson Co., M. J. Bevanda, Charles L. Harney Inc., Ostrander Constr. Co., A. Teichert & Son and Trepte Constr. Co., Inc.**, 10 W. Orange Ave., South San Francisco, Calif. CA $48,928,100. Trinity Dam main unit of Trinity River Div., Central Valley Proj. Spec. DC 4824, CALIFORNIA. Bureau Reclamation Dpt. Interior, Weaverville, Calif. Bids Feb. 5, awarded Mar. 11. CD 2/7, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 3/13.
Guy F. Atkinson Co., 10 West Orange Ave., South San Francisco, Calif., LB $6,345,594 (8 bidders) freeway, ramps, connections and 4 bridges, 4.4 mi. U. S. 101 between 1 mi. south of Dyerville and Englewood, Humboldt Co. CD 2/15.

▲ **J. C. Boespflug Constr. Co.**, 605 S. Lucas Ave., Los Angeles, Calif., CA $3,485,189, est. $3,700,000; Lakewood Blvd. and Spring St. underpasses at Long Beach Municipal Airport, Spec. R-2591, LONG BEACH, CALIF. City Council, City Hall, Long Beach, Calif. Bids Mar. 1. CD 3/6, under LB.

BUILDINGS—LB & CA

▲† **Paul Hardeman, Inc.**, 10955 W. Pico St., West Los Angeles, Calif. LB $3,392,000. (2 bidders) structural steel frame MULTIPURPOSE BLDG. and all site development, utilities and electrical yard work at Naval Reactor Facility, National Reactor Testing Station, for Westinghouse Electrical Corp., ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. CD 3/24/49.

CANADA

BUILDINGS—LB & CA

▲ **Perini Ltd.**, 248 Albert St., Ottawa, Ont., CA $2,591,949. 8 story, 60x240 ft., 50x110 ft., steel CITY HALL, Green Island, OTTAWA, ONT. City, 48 Rideau St., Ottawa, Ont. Bids Jan. 31, awarded Mar. 1. CD 2/11, under LB.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Baker & Ford**, Mason Bldg., Bellingham, Wash., LB $9,496,589, est. $8,829,404 (3 bidders) DEW line stations at Driftwood Bay and Nikolski, Inv. 57-60, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 8. CD 2/7.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Tecnica Constructora, C.A.**, Constructora Nacional de Tuneles y Carreteras, C.C. and **DeLong de Venezuela C.A.** (Subsidiary of DeLong Corp., 29 Broadway, New York, N. Y.), LB $85,392,305; Alt. $85,201,771. 2,600 ft. 72-ft. wide four lane bridge and road with central railroad tracks over outlet Lake Maracaibo, VENEZUELA. Ministerio de Obras Publicas, Centro Simon Bolivar, Torre Sur, Caracas, D.F., Venezuela. Bids Mar. 7. CD 1/21.

▲ **Tecnica Constructora, C.A.**, Constructora Nacional de Tuneles y Carreteras, C.C. and **DeLong de Venezuela C.A.** (Subsidiary of DeLong Corp., 29 Broadway, New York, N. Y., U. S. A.), Edificio Polar, Pisos 14-16, Plaza Venezuela, Caracas, D.F., Venezuela, LB $84,392,305, Alt. $85,201,771. 2,600 ft. 72-ft. wide four lane bridge and road with central railroad tracks over outlet Lake Maracaibo, VENEZUELA. Ministerio de Obras Publicas, Centro Simon Bolivar, Torre Sur, Caracas, D.F., Venezuela. Bids Mar. 7. CD 1/21.

(Proposal Advertisement see pp. 179 to 181)

One of two Manitowoc Model 2000 25-ton cranes used by Foster-Wheeler during erection of Murray Gill steam generating plant for Kansas Gas and Electric Co., Wichita, Kansas. Crane raised sections for 110' x 10' diameter smoke stacks with 85' boom.

"...absolutely no maintenance in a year-and-a-half..."

Manitowoc crane is "perfect" . . . says Field Superintendent

"As far as Manitowocs are concerned, I'd rather use them than any crane I've come in contact with!" That's Mr. S. C. Townsend, a Field Superintendent for the Foster-Wheeler Corp., referring to a 25-ton Manitowoc Model 2000 crane he uses — one of 30 Manitowocs owned by Foster-Wheeler. Here's more sincere praise Mr. Townsend has for Manitowoc cranes . . . "They never have given us any trouble. My operators say they are the easiest on the market to operate. Manitowocs seem to have plenty of horsepower for anything we attempt to do. One of the 2000 machines has had absolutely no maintenance on it, except to change oil, in the year-and-a-half we have owned it. It has been perfect. I appreciate the fast, courteous service I get from Manitowoc."

Why not put a Manitowoc to work on *your* next job? A phone call to your helpful Manitowoc distributor will bring full details and specifications. Contact him *now* before your next important bid!

Manitowoc Engineering Corp. Manitowoc, Wis.

"...easiest to operate..."

Disc type swing and travel clutches give smooth, pin-point control without grabbing or jerking. Optional air controls and power-smooth torque converter make any Manitowoc the "operator's friend".

"...plenty of horsepower..."

Simplicity of main machinery design adds horsepower where it's needed. Just 13 gears and pinions in the Model 2000 machine . . . only working gears turn. Exclusive sliding pinion arrangement uses only one set of clutches to drive travel, swing and boom hoist.

"...never any trouble..."

Finest quality construction with special alloy steels used at all points of greatest wear. Maintenance is easy for simple servicing in the field with minimum downtime.

"...fast, easy convertibility..."

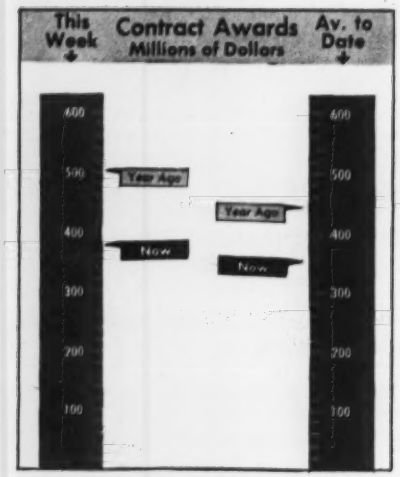
Conversion to 1¼-yd. shovel and trench hoe, and long-reach dragline is quick and simple with same back hitch arrangement. Except for drum laggings, all changes need only pin connections.

MANITOWOC

SHOVELS 1-5½ YD. Speedcrane CRANES 20-100 TON

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 12 wks 1957	Chge %
	millions		
Federal	$98.8	$547.2	+29
State and Municipal	129.0	1,568.0	+14
Total Public	227.8	2,115.2	+18
Total Private	148.1	2,093.1	−40
U. S. Total	$375.9	$4,208.3	−21
By Type of Work			
Waterworks	$2.7	$78.8	+34
Sewerage	5.9	88.4	−47
Bridges	28.1	160.1	+35
Highways	43.3	635.0	+33
Earthwork, Waterways	66.7	304.6	+108
Buildings:			
Public, Excl. Housg.	44.1	498.0	+9
Public Housing	7.9	58.1	−42
Private Housing	70.2	724.3	−52
Commercial	26.9	386.5	−25
Industrial	49.2	824.1	−37
Unclassified	30.9	450.4	0
U. S. Total	$375.9	$4,208.3	−21

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

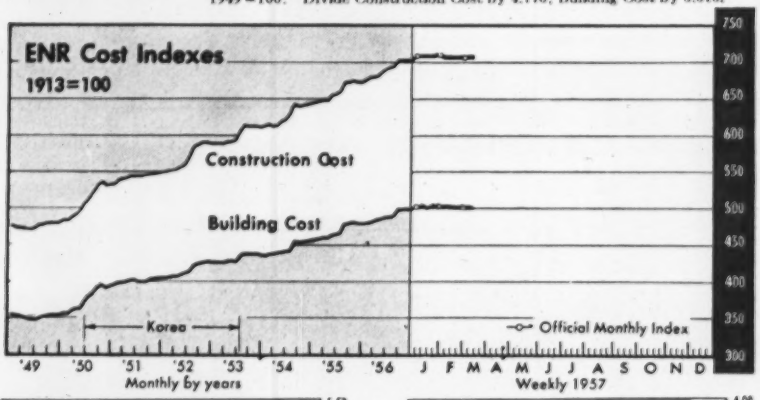
NEW CAPITAL FOR CONSTRUCTION

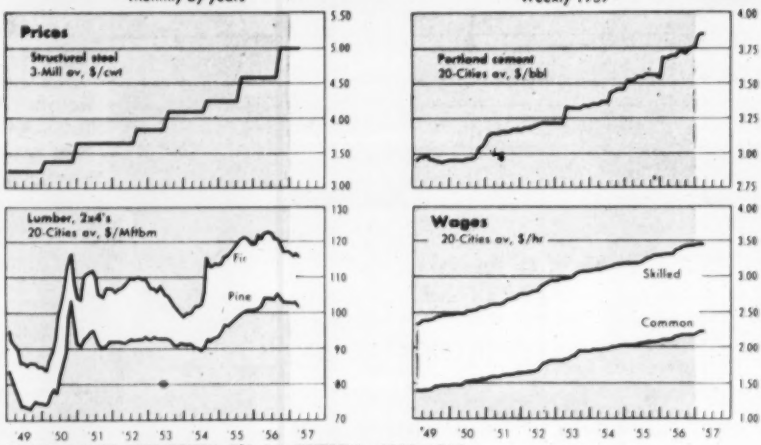
	Week of Mar. 14	Cum. 11 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$119.7	$1,322.4	+126
State and Municipal:			
All Except Housing	128.3	1,160.7	+11
Housing	...	41.5	+104
Federal Loans	0.8	21.3	−4
Federal Aid	...	....	...
Total Nonfederal	$248.8	$2,545.9	+52
Federal Appropriations:			
in U. S.	...	....	−100
Outside U. S.	...	....	...
Total New Capital	$248.8	$2,545.9	+49

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Mar. 14 1957	% Change from Feb. 14 1957	% Change from Mar. 15 1956
Construction Cost	708.98	+0.01	+3.9
Building Cost	500.85	−0.2	+3.3

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.030; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.





ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Mar. 1957	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Mar. 1957	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	523	0	+4.2	442	0	+4.2
Baltimore	642	0	+8.6	499	0	+5.7
Birmingham	556	+0.2	+1.8	457	+0.3	+3.1
Boston	744	−0.6	+4.5	507	−0.9	+3.3
Chicago	789	−0.2	+2.6	504	−0.3	+2.3
Cincinnati	711	−0.5	+5.4	486	−0.8	+3.6
Cleveland	820	0	+4.5	509	0	+4.0
Dallas	525	−1.8	+2.4	439	−2.2	+2.7
Denver	697	0	+6.4	523	0	+7.4
Detroit	809	0	+4.0	528	0	+4.5
Kansas City	717	0	+1.5	507	0	+1.6
Los Angeles	731	−0.7	+2.4	494	−1.1	+1.7
Minneapolis	758	0	+5.2	527	0	+4.8
New Orleans	563	−0.3	+3.1	463	−0.4	+2.7
New York	852	−0.1	+4.4	578	−0.2	+4.4
Philadelphia	749	0	+3.8	556	0	+3.7
Pittsburgh	762	0	+10.7	541	0	+8.2
St. Louis	760	0	+0.4	529	0	+1.0
San Francisco	720	−0.3	+4.0	488	−0.4	+3.5
Seattle	746	0	+4.2	452	+0.9	+3.0
U. S.—20 Cities' avg	709	−0.2	+4.2	501	−0.2	+3.8
Montreal	560	0	+1.4	437	0	+1.8
Toronto	596	+0.3	+6.8	462	+0.4	+3.6

now, in concrete vibrators, too,

if it's Remington, it's right!

wheelbarrow mounting for easy mobility!

better concrete at lower cost!

The famous 7GVW21 Concrete Vibrator has 4 great features that make it right for you!

- Dependably powered by rugged single-cylinder, 4-cycle air-cooled gasoline engine with countershaft drive and automatic clutch.
- This versatile unit can also be used to power attachments for concrete surfacing, sanding, wire brushing, pumping and other jobs.
- Long-reaching flexible shaft made up of 7 ft. or 14 ft. sections. Extra sections can be added as needed.
- Unit can be moved right along with the work on pneumatic-tired wheelbarrow mounting. This unit is also available on 360° swivel round base mounting.

MODEL 7GVW21 *5 HP concrete vibrator. Available with 2⅛" x 20" 7,000 RPM vibrating head or 2⅛" x 12" 10,000 RPM vibrating head.*

Remington

MALL TOOL COMPANY
Division of Remington Arms Company, Inc.
25000 S. Western Avenue • Park Forest, Illinois

Mall®

Electric circular saws are best buys for every purpose

Electric impact wrenches speed up work on heavy equipment

Specifications subject to change without notice.

You'll use less cement, coarser aggregate and produce denser, more uniform concrete...and do it in fewer man-hours!

That's a mighty big order to be sure! But it's being done every day on every kind of concrete job by these indispensable vibrators by Remington—the newest name in power tools and famous for 141 years for quality in sporting firearms and ammunition.

You name it...Mall Tool Company, Division of Remington Arms Company, Inc., gives you a vibrator for every application from small form work to large mass concrete compaction. Over a dozen models, most available in gasoline engine, electric or pneumatic, including the new 1-man 115-volt vibrator with motor-in-head. Let us send you our latest catalog today!

MALL TOOL COMPANY
Division of Remington Arms Company, Inc., Dept. D31A
25000 S. Western Avenue • Park Forest, Illinois

Please send free catalog on Construction Tools.

NAME_____

STREET_____

CITY_____ ZONE____ STATE_____

ANNOUNCING

MACOMBER

AN ENGINEERING ACHIEVEMENT

IN STEEL FRAMING MEMBERS USED TO SPAN WIDE AREAS

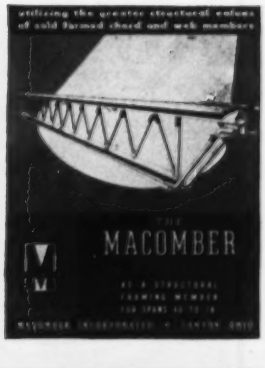
MACOMBER

COLD FORMED **V-GIRDERS**

A STRONGER FLOOR AND ROOF SUPPORT

IN THE SPAN RANGE
40 to 76 ft.

SEND FOR CATALOG



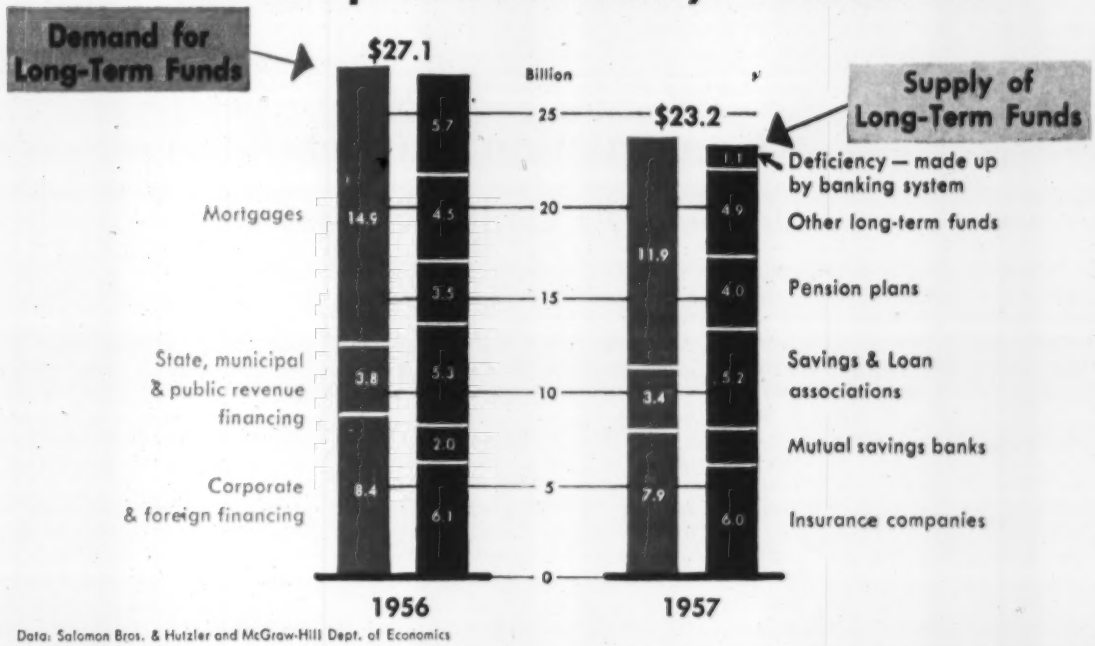
NAILABLE V-BEAMS
•
V-GIRDERS
•
V-BOWSTRING TRUSSES
•
METAL DECK
•
V-LOK STEEL FRAMING
•
STEEL JOISTS

MACOMBER
INCORPORATED
CANTON 1, OHIO

STANDARDIZED STEEL BUILDING PRODUCTS

The Longer Look

Smaller net increase in mortgage financing will ease pressure on money market in 1957



Data: Salomon Bros. & Hutzler and McGraw-Hill Dept. of Economics

Demand for Credit Is Expected to Ease

Construction money will be easier to find this year, but it's likely to cost just about as much as it did late last year.

This is the feeling of banking and investment experts as they size up the money market for the rest of 1957.

Record sales of new securities so far this year are evidence that construction will not be blocked by lack of financing—if the builder is willing to pay today's high interest rates. Corporation and government offerings already have drawn $2.5 billion in new money in the first 11 weeks of 1957, running 49% ahead of the same period last year.

What has happened in the money market, in brief, is this: Demand for new long-term money is less overall than last year, especially for new mortgage money. And institutional sources have more money to invest. This means much less pressure on bank money to fill the gap.

The principal sources and uses of long-term funds in 1956 and 1957 are shown in the chart, which is based on estimates by Girard L. Spencer of Salomon Bros. & Hutzler (members of the New York Stock Exchange). They shape up as follows:

Demand for funds—Total demand for new capital in 1957 is estimated at $23.2 billion. This represents a drop of almost $4 billion from last year's total, estimated at $27.1 billion.

Mortgages—Net increase in mortgage borrowing for housing, farm buildings, commercial and industrial construction will be $11.9 billion, a sharp drop from the $14.9 billion increase estimated for last year. A decline in new housing starts and a rise in money available from repayments are the reasons for the drop in net new requirements.

Corporate, foreign and International Bank financing—Net increase will be $7.9 billion, down from the $8.4 billion of 1956. Corporate offerings are still running very high, but the money market should take this year's issues in better stride.

State, municipal and public revenue authority financing—Estimated net increase is $3.4 billion, with gross offerings of $6.2 billion. This is off slightly from last year's net rise of $3.8 billion.

Insurance companies—Life insurance companies will make a net contribution of $5.4 billion, slightly more than 1956. But fire and casualty companies, hit hard by underwriting losses, may be able to invest only $600 million—against $800 million last year.

Mutual savings banks—Net provision of $2 billion will match last year.

Savings and loan associations—New funds available may drop from last year's $5.3 billion because of competition for savings from commercial banks.

Pension plans—Both private pension funds ($2.3 billion) and state and municipal retirement and pension funds ($1.7 billion) will make greater net contributions to the capital market.

(Continued on page 168)

Other long-term funds—Another $4.9 billion will come from funds accumulated by individuals, personal trusts, charitable and educational endowments and other institutions. They provided $4.5 billion in 1956.

The balance between this year's demand for $32.2 billion and the supply of $22.1 billion from non-bank sources will be made up by the commercial banking system. The $1.1 billion "deficiency" is far less, however, than last year's $5.7 billion.

In commenting on the outlook for capital markets in 1957, Spencer notes two developments that could prove important:

- If current high interest rates continue, redemptions of government savings bonds could make available a bigger supply of money for non-government investments; and
- If the market permits, "a substantial amount of long-term financing by private and public borrowers that was postponed or canceled in 1956 could be offered this year," which would increase the demand for long-term capital.

Another set of estimates of sources and uses of long-term money will be published in the next few weeks by Bankers' Trust Company of New York. While it is expected to show slightly higher estimates of the demand for capital, the basic conclusion will be the same—more money available for investment in 1957 and less pressure on the resources of commercial banks.

(*B&F continued on page 169*)

Construction Markets

Harrisburg: An On-the-Spot Report

"Currently there is more architectural work in the Harrisburg area than facilities can handle," but privately-financed heavy construction and housing have dropped off, with housing down about 25% from a year ago while public works is taking up the private building sag.

Richie Lawrie, Jr., of Lawrie & Green Architects, reports that planning is going ahead full steam, while others at the building level in the construction industry caution that the next four months will see few big private jobs started. A number of public plums, however, are slated for early bids, including a $10 million bridge and approach project over the Susquehanna River as part of the new interstate highway system, and a $2.4 million unit at Harrisburg State Hospital.

Several major office building projects in the City of Harrisburg are stalled—at least temporarily—because the Commonwealth of Pennsylvania recently opened a new $8 million state office building, and the Pennsylvania Turnpike Commission moved its headquarters into a new structure at pike-side.

With the leasing of private office space by the state—once a booming business here—now practically washed up, there are just not enough tenants in sight for proposed private office buildings and their construction is waiting until leases can be signed in advance.

Within the past year state agencies opened four new office buildings in the area.

A few shopping centers, schools and new church buildings are among the "sure" projects in the near future, although the procurement of steel is a problem for the contractors.

A big city sewage treatment plant, a new post office, an administration building at Middletown Air Depot (Olmstead Field), and a state-proposed underground parking project at the capitol are expected to move this year.

The City of Harrisburg is committed to extensive repairs on the Mulberry St. traffic bridge over a railroad area. This will cost more than $1 million and is expected to come up for bids soon.

Ralph M. Ritter of Ritter Brothers, heavy construction contractor, said, "It may be just a little bit slower" in building activities, "but we have a good many big jobs coming up this year."

Two years ago Pennsylvania's state government, with most of its jobs on a spoils system, changed hands politically for the first time in 20 years when the state went Democratic. The new Democratic jobholders generally are not buying homes in Harrisburg. They can be sure of their jobs here for only two more years, depending on the swing of the political pendulum. The real estate market is suffering from this, and new housing construction is off 25% from a year ago.

$8,000,000 HEALTH AND WELFARE building has cut back demand for office space in privately-owned buildings; slowed down other construction. Ritter Brothers, Harrisburg, was contractor.

Thomas B. Shriver, Jr., executive secretary of the West Shore Chamber of Commerce, said nearly 600 new houses were built in the expanding cross-river area in 1956. City officials estimate a similar number for the suburban communities on the east side of the river.

But for the time being the home developers have virtually stopped "speculation" construction, and are starting no new units unless they have signed, sealed and delivered orders for them.

Bankers, realtors and others in allied lines say they are "optimistic" that the tight money situation will improve, but the postwar residential building boom is over.

A few years ago the average residential unit would be purchased with about $2,000 to $2,500 as down payment, according to James L. Barren, secretary of the Harrisburg Builders' Exchange. "Now a down payment of $4,000 to $7,000 is needed because of the money market."

The Harrisburg Housing Authority plans 330 units of public housing in conjunction with a slum clearance and redevelopment program. It is the city's first major redevelopment project. Just now starting in the administrative stage, the first slum demolition is expected to move soon. The new construction is not in the immediate future.

In the housing field, however, 90 units will go up soon at the new Cumberland Army Depot near the city, as a federal project.

With most of the contractors working on reduced schedules, labor is plentiful in the area, the building trade unions say.

Capehart Housing

Defense Department will lift freeze by April 1

The Defense Department plans to lift its one-month freeze on Capehart military housing bids and starts by April 1. At that time, the armed services will resume inviting and accepting construction bids and issuing letters of acceptability to approved contractors.

But the program will be allowed to go forward only on a limited scale. Only projects deemed most urgent will get official go-aheads. The services have drawn up a list of Capehart housing projects for which contracts have not yet been awarded, arranged in order of priority.

The office of the Secretary of Defense will determine which projects to okay based upon the services' priority claims.

According to insiders, priorities are being based on how far individual projects are advanced. If, say, an architect-engineering contract has already been awarded, the project will rate higher priority than a project for which no funds have yet been spent.

The slow-up on Capehart housing stems from the tightness of the money market and the near depletion of Federal National Mortgage Association funds. Last December, the Pentagon requested FNMA to buy Capehart mortgages at par using $200 million authorized for that purpose. Now, less than $50 million of that sum is still available.

Congress has been asked "reluctantly" to increase FNMA's purchase authority by $100 million. The reluctance stems from the official view that the Capehart program's fundamental concept is construction of military family housing with private capital, with the government guarantees to cover only the mortgages.

But in view of Washington's current drive to hold down government expenditures, there's fear that Congress will turn thumbs down on the proposal. Besides, the Pentagon concedes that this sum will not go far in pushing the military housing program. As one official explains it, the big hope is that "private funds may again be available (to finance military housing) at acceptable prices" by next fall.

Pentagon officials stress that the Capehart program is not being cancelled. They refer to a Feb. 28 stop order from Deputy Defense Secretary Robertson on bids and letters of acceptability as a "temporary halt pending rescreening."

Up to now, only 19 Capehart projects—covering a total of 8,026 units—have been contracted for out of the 90,000 units approved by the Secretary of Defense. Bids have been accepted on 11,023 other units. Presumably, these will go forward when the freeze is lifted.

But the future is uncertain for 8,623 units now out for bid and 63,298 units still in various stages of development prior to advertising.

College Community

Stanford launches plan to develop 3,500 acres

Stanford University has leased the first parcel of its land in a long-range plan to create a rural-residential community in the foothills west of the campus at Stanford, Calif.

Peninsula Pacific Construction Co., of Menlo Park, will subdivide 30 acres as the initial unit of a 940 acre tract that has been named Stanford Hills by the university's board of trustees.

Stanford has a total of 3,500 acres earmarked for residential development, enough land to provide homes for 20,000 people, according to Alf E. Brandin, the university's executive officer for land development.

Homesites will range from one-quarter of an acre to one acre, with a few running as large as five acres where the terrain is more rugged.

Stanford Hills is the first major unit. The university, working with the planning firm of Skidmore, Owings & Merrill and with leading subdividers, has spent the last 2¼ years on a master community plan for 940 acres.

The 30 acre piece, leased for 99 years to Peninsula Pacific Construction Co., is at the northeast corner of Stanford Hills, nearest Menlo Park. Final steps to annexation of the area by Menlo Park and its inclusion in the Menlo Park Sanitary District have been initiated by Stanford.

Peninsula Pacific expects to break ground for roads and utilities in mid-April. Construction of the first house is expected to begin Aug. 1. Houses will be individually designed in California ranch style to cost $33,000 to $50,000, including a 99 year sublease on the land.

All power and telephone lines will be laid in underground conduit. Low traffic, local roads will be built within each neighborhood, feeding into broader, inter-neighborhood "collector" roads.

Negotiations with subdividers for progressive development of additional areas are under way.

Tile Board Loses Case

Court decides licensing law is unconstitutional

A law setting up a board to license tile contractors has been declared unconstitutional by the North Carolina Supreme Court. The decision is expected to pave the way for suits challenging the legality of similar boards.

Declaring that the law creating the North Carolina Licensing Board for Tile Contractors "tends to promote a monopoly in what is essentially a private business", the court overruled a lower court decision. The lower court had upheld the state board in its refusal to grant a license to Frank Roller, of Richmond County.

Roller contended that his bids for tile-laying work were refused after he failed to pass the board's licensing examination. The Supreme Court, in its decision, stated that the law setting up the board made it "difficult to conclude otherwise than that the effect . . . is to give control of tile contracting to those already in the business and a continuing opportunity to perpetuate that control."

Under the law setting up the board, all those engaged in the profession at the time the law went into effect were licensed automatically. All other licenses were to be granted only to those who passed an examination by the board.

Declaring that the act is unconstitutional because it deprives workmen of the right to earn a living, the court held that it "has its main and controlling purpose not health, not safety, not morals, not welfare, but a tight control of tile contracting in perpetuity by those already in the business."

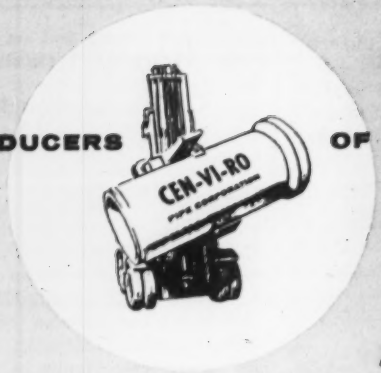
It noted that the board is composed only of members of the tile-laying business.

Like other trades and professions that have set up such boards, tile contractors claimed the licensing act was necessary for public health and safety and to protect the public from fraud.

The court rejected the claim that the licensing board was "reasonable and necessary to prevent fraud and incompetence, and to promote public health." It said the health claim "is considerably weakened by the failure of the act to assign to the health authorities any additional duties or give them any voice in the work of the licensing board."

As to preventing incompetence, the court said the claim that more skilled workmen can do a better job applies to "any other trade in which human beings engage—even to shining shoes."

(B&F continued on page 171)



CEN-VI-RO

PRODUCERS OF THE WORLD'S FINEST CONCRETE PIPE

offers a report about

LEAK-PROOF

MULTI-PURPOSE JOINTS

NON-CORROSIVE • ALL CONCRETE

Confined Rubber Gasket Joints are one of several superior CEN-VI-RO features that are outstanding in the industry. The following seven basic advantages tell the story:

1. MEETS TOUGHEST SPECIFICATIONS. It complies with all recognized specifications for pressure pipe, such as A.S.T.M., C 361-T, C 362-T, and AWWA C 302.

2. JOINTS CAN FLEX WITHOUT LEAKING. The "O" ring principle provides a self-energizing gasket with sealing properties, which increase with increased pressures. Clearances between mating surfaces of the bells and spigots are held constant, permitting the joint to be flexed.

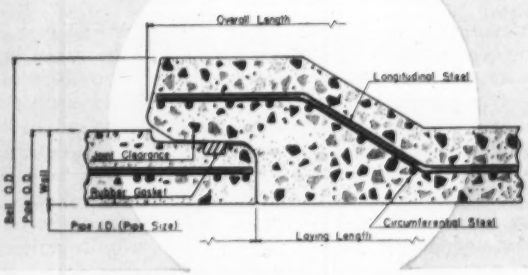
3. PERMITS EXPANSION and CONTRACTION. The round rubber gasket is confined in a groove and compressed, thus permitting expansion and contraction, as well as deflection, without leakage. Seating in the groove prevents the gasket from being displaced during laying.

4. NO ADHESIVES OR CAULKING COMPOUNDS. The Cen-Vi-Ro joint and rubber gasket requires no adhesives, compounds, or caulking to aid its function of joining concrete pipe and keeping water either in or out.

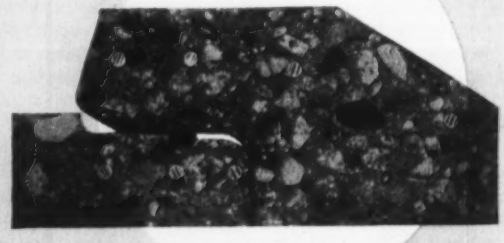
5. MATING SURFACES ARE TRUE TO SPECIFICATIONS. The Cen-Vi-Ro process produces all concrete bell and spigot joints with mating surfaces, including gasket groove, true to specified tolerances, without special treatment or honing.

6. EASIEST PIPE TO LAY. The ease of laying and joining concrete pipe having the Cen-Vi-Ro bell and spigot rubber gasket type joint is unequalled in the industry.

7. PROVEN BEST TIME AFTER TIME. TheCen-Vi-Ro joint has met the test of time and service in hundreds of installations.



THIS Rubber Gasket Joint Assembly is used in the manufacture of Cen-Vi-Ro Reinforced Concrete Pipe of conventional design and for Cen-Vi-Ro Reinforced Concrete Pressure Pipe. When the pipe sections are drawn together in the trenches, the round rubber "O" ring-type gasket is uniformly compressed around the periphery of every joint to provide a water-tight seal. There is no exposed steel in the joint assembly. The flexible joint allows for expansion, contraction, settlement and lateral displacement of the finished pipe lines.



ALL CONCRETE — NO STEEL — NO CORROSION

For additional literature, further information, or the name of the nearest Cen-Vi-Ro plant, please write

CEN-VI-RO PIPE CORPORATION

8610 ATLANTIC BLVD., SOUTH GATE, CALIF.

Industrial Building Boom to Continue

SEC-Commerce survey of capital spending plans by U. S. business indicates 6.5% increase over 1956

The market for industrial construction will continue to expand this year. According to a new survey of capital spending plans by U. S. business—conducted by the Securities & Exchange Commission and the Commerce Department—new plant and equipment expenditures in 1957 will increase about 6.5% over last year.

(How much of this represents expenditures for contracts previously awarded and how much represents new contracts to be let this year cannot be determined readily.)

The 6.5% increase expected in plant and equipment outlays this year is translated into a sizeable volume of work.

In dollars, that's an increase of $2.3 billion (1956 spending was $35.1 billion). And if the expansion plans are achieved, 1957 will be the third record spending year in a row.

But the 6.5% gain indicated for 1957 contrasts with the whopping 22% jump last year. Government economists, figuring there would be some slowdown in the rate of growth, had expected the survey to show a gain of about 10% this year. Now, there is a chance all of the 6.5% increase in dollar totals will be eaten up by price rises, with little or no net gain in physical capacity.

However, compared to 1956, the SEC-Commerce survey results do point to a lessening of inflationary pressures. To this extent the results will be reassuring to the White House and the Federal Reserve, where most of the worry over inflation has shown up—even though the survey throws a new question mark into the 1957 picture.

The over-all gain has a healthy undertone that government economists quickly point out. The gain is shared by most industries—not just based on the spectacular performance of a few.

The SEC-Commerce survey—taken in late January and February—is the second covering industry's expansion plans for 1957. The McGraw-Hill Economics Department made the first last fall: It showed a planned expansion of 11%. The two surveys, however, are not directly comparable; so the change from an 11% gain seen in the McGraw-Hill survey to the 6.5% in the SEC-Commerce survey can't be taken entirely as a measure of declining investment plans since last fall.

For one thing, the SEC-Commerce survey gets reports from a great many small companies not included in the McGraw-Hill survey. For example, the SEC-Commerce category of "Commercial and Other" shows a drop of $687 million in plans for 1957, compared to the 1956 total. This is the biggest dollar drop for any industry group, and is due mostly to a decline in shopping centers and other retail construction. But since the category contains many small companies, it is not reflected to the same extent in the McGraw-Hill study. And small companies—presumably harder hit by tight money and the shortage of still-scarce capital goods—are either cancelling or postponing a larger proportion of projects than are the larger firms.

Dependable measurements of any shifting trend in planning will show up when McGraw-Hill publishes its next survey in mid-April, and SEC-Commerce follows with one in May.

Right now, the marked slowdown in the rate of growth—shown in both surveys—comes from a number of factors:

• Shortages of goods and money are probably most important. For the past nine months, businessmen have reported inability to reach their goals, simply because financing cannot be arranged or scarce goods cannot be delivered. Structural steel, for instance, has never caught up since last summer's strike.

• Rising costs may be playing a major role in some industries. Chemical producers, for example, have been harassed by narrow profits due to rising costs and have been unable to post offsetting price increases because of increasing competition. The result: They're planning another record year of expansion, but not on the scale of last year, when they increased outlays $439 million. This year they expect a rise of about $344 million.

These influences are falling with widely varied impact on both industry classes and individual companies, of course. Among durable goods makers, for example, Autos and broad Stone, Clay and Glass Products categories show declines—while five industries plan increases.

The 6% decline indicated by the survey for the "Commercial and Other" category is misleadingly mild. The class includes trade, service, finance and construction, and among these, trade shows a sharp drop. But in this March survey, each year, the category is expanded to lump in communications with it. (Communications is dominated to such an extent by American Telephone & Telegraph that the government does not want to show it separately until after AT&T's stockholders hold their meeting in April, when future plans are publicly announced.)

(B&F continued on page 172)

Plant and Equipment Spending to Rise 6.5% in 1957

(SEC-Commerce estimates in millions of dollars)

	1955 Actual	1956 Actual	1957 Planned	Per Cent Change 1955-1956	Per Cent Change 1956-1957
All Industry	**$28,701**	**$35,081**	**$37,361**	**+22**	**+ 6.5**
Manufacturing	**11,439**	**14,954**	**16,414**	**+31**	**+10**
Iron and steel	863	1,268	1,650	+47	+30
Nonferrous metals	214	412	821	+93	+99
Chemicals & allied products	1,016	1,455	1,799	+43	+24
Machinery, excl electrical	809	1,078	1,394	+33	+29
Electrical machy & equip	436	603	692	+38	+15
Stone, clay and glass	498	686	633	+38	− 8
Petroleum & coal products	2,798	3,135	3,403	+12	+ 9
Paper & allied products	518	801	835	+55	+ 4
Rubber products	150	201	208	+34	+ 3
Food and beverages	718	799	798	+11	− 0.1
Motor vehicles & equipment	1,128	1,689	1,302	+50	−23
Transportation equipment, excl motor vehicles	274	440	595	+61	+35
Textile mill products	366	465	379	+27	−18
Other manufacturing	1,651	1,922	1,905	+16	− 1
Public utilities	4,309	4,895	6,062	+14	+24
Commercial and miscellaneous	7,488	11,048	10,370	+17	− 6
Communications	1,983				
Mining	957	1,241	1,221	+30	− 2
Railroad	923	1,231	1,468	+33	−19
Transportation excl railroad	1,602	1,712	1,826	+ 7	+ 7

ANOTHER EFFICIENT WOOD PRODUCT

New 16-page booklet, for designers, covers the how and why of

CLEAR SPAN WOOD ROOF TRUSSES

built with TECO Connectors, that are strong, economical, and durable.

Advantages of Clear Span Roof Construction —

- ***Unobstructed*** **views in assembly places, such as CHURCHES and SCHOOLS —**
- ***Flexibility*** **of interior layout to accommodate changing conditions, as in COMMERCIAL and INDUSTRIAL BUILDINGS —**
- ***Accessibility*** **to all areas, as in WAREHOUSES and GARAGES —**
- ***Maximum utilization*** **of other open-planned interiors, as in HOMES and GARDEN APARTMENTS.**

There's a wood roof truss for just about any type of building. For proper selection, be sure to refer to "Clear Span Wood Roof Trusses." Send today for FREE COPY.

PA-571

TIMBER ENGINEERING COMPANY
1319 18th St., N.W., Washington 6, D. C.

Please send free copy of "Clear Span Wood Roof Trusses."

NAME.....

FIRM.....

STREET.....

CITY.....ZONE.....STATE.....

Costs Dip Slightly

Indexes edge downward as lumber prices drop

A sharp drop in Denver's price of Douglas fir 2x4's offset an increase for the same item in Cleveland last week and caused a slight dip in construction costs.

ENR's 20-Cities Construction Cost Index moved back down one point to 708.98, about the same as two weeks ago, while the Building Cost Index also dropped by a point to 500.85. The indexes are based on 1913 = 100.

Both indexes have seesawed within a narrow range during the last seven months, and now are slightly under their all-time highs, reached earlier this year.

Compared with seven months ago, the indexes show little net change. The Building Cost Index now is no higher than it was on Aug. 9, 1956, just after the mill price increase in structural steel pushed it up sharply. The Construction Cost Index is only three points—0.4%—above its Aug. 9, 1956 value.

This overall cost stability during the last seven months contrasts with the trend during the corresponding period 12 months earlier (August 1955 to March 1956). In that period, the Construction Cost Index jumped 10 points, or 1.5%, while the Building Cost Index rose by six points, or 1.3%.

Financing Stalemate Halts 14 Colorado Road Projects

The Colorado Department of Highways has virtually run out of cash with which to carry on the biggest road-building program in the state's history.

Chief Engineer Mark U. Watrous has halted advertising for bids on all but the most urgent construction projects, pending negotiations to obtain a $5 million advance from the U. S. Bureau of Public Roads from federal aid funds allotted to Colorado.

The report of State Controller James A. Noonan showed that, as of Feb. 27, the department had less than $1.5 million cash on hand. This must be used to meet the payroll of $650,000 and to cover all other operating costs.

Principal reason for the financial difficulty, Watrous said, was inability of the Highway Commission to sell $8 million in anticipation warrants because prospective bidders refused to bid within the statutory limitation of 2½% interest.

When no bids were received on Jan. 15, the commission immediately recommended to the governor and the General Assembly that the permissible interest rate be increased to 4%. Within recent days legislative bills have been introduced to increase the interest rate to 3¼ or 3⅜%, but no action has been taken on them. Fourteen projects, covering 39 miles and representing a total cost of $6 million, were ready to advertise for bids by Mar. 1, but had been held up.

NYC Promises $22 Million Yearly to Curb Pollution

New York City has promised to set aside $22 million a year through 1965 to meet the requirements of its pollution abatement program, which has had a 1959 deadline. The action followed a warning by the Interstate Sanitation Commission for a firm commitment when asked earlier by the city for an extension to 1964 or 1965.

The money will be used to finance the $232 million second phase of the city's pollution control program. The proposal will mean tying up 12% of new capital annually for this purpose.

The next step is for the commission's executive committee to consider the application, according to Seth Hess, ISC director.

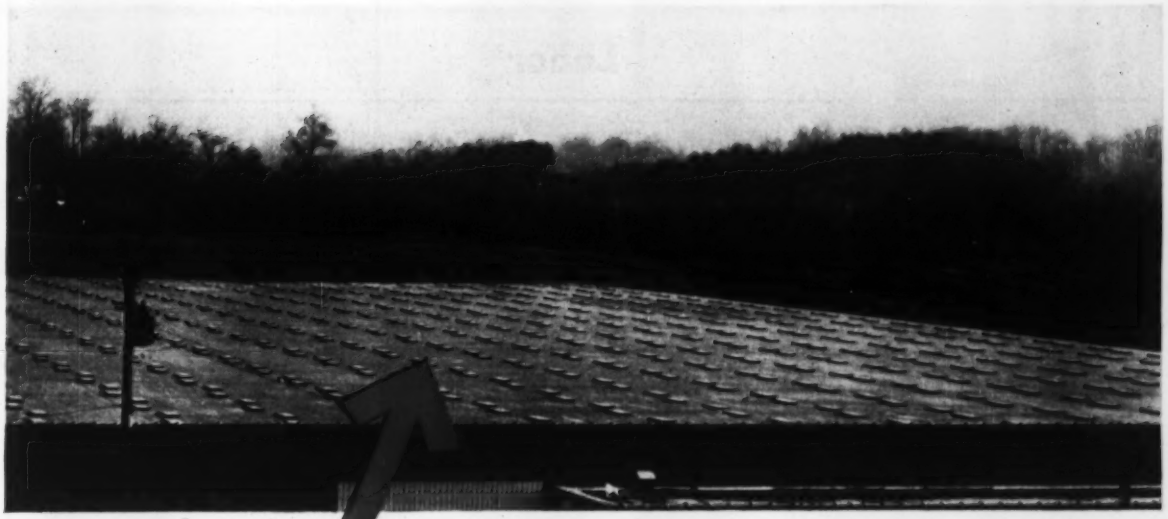
Business Briefs . . .

• **Cement plant**—Permanente Cement Co. picked up its option on 2,200 acres of land near Scholle, N. M., as a site for a $10 million cement plant with an annual capacity of 1.4 million bbl. Kaiser Engineers will design the facility.

• **Structural steel shipments up**—Fabricated structural steel shipments set a new high for January when 262,177 tons went for fabricating, a 4% increase over a year ago. Bookings went to 270,629 tons, 26% below the record December tonnage of 404,396 tons. The industry has upped production schedules for the next four months by almost 20,000 tons—to 1.3 million tons—to cut down its Jan. 31 backlog of nearly 3.5 million tons.

• **Raising the roof**—Ruberoid Co. is posting 6% price hikes on asphalt shingle and roll roofing and adding 4% to wholesale prices of saturated asphalt felt. The company blames higher raw material, labor and freight costs for the increase. Flintkote Co. is expected to follow suit, claiming the increase "absolutely necessary". Johns-Manville also is studying the situation.

• **Sales record**—National Gypsum Co. sales hit a record volume last year. The $151.8 million total was up $3.6 million over 1955. But the net profit of $14.3 million was down slightly from the previous year's level.



It's a roof and a ceiling in one . . .

Designed in accordance with specifications adopted by A.I.S.I. for light gauge structures, dated January, 1949.

It's Wheeling Tri-Rib Steel Roof Deck!

Notice the broad, open interior. Provides more usable floor space, easier vehicular travel and more efficient materials handling. All this is possible because lighter, stronger Tri-Rib Roof Deck permits fewer supporting columns as well as shallower footings, no sub-purlins. Tri-Rib also made it easier to install and frame the skylights and ventilators . . . and improved visibility throughout the entire warehouse without artificial light.

By painting the underside of Wheeling Tri-Rib white the owners were also afforded a functional, efficient ceiling at the same time. A considerable savings in itself.

Wheeling Tri-Rib is made of Cop-R-Loy steel for longer, dependable life.

For full details see our catalog in Sweet's or contact a Wheeling warehouse or sales office.

WHEELING CORRUGATING COMPANY • WHEELING, WEST VIRGINIA

IT'S WHEELING STEEL

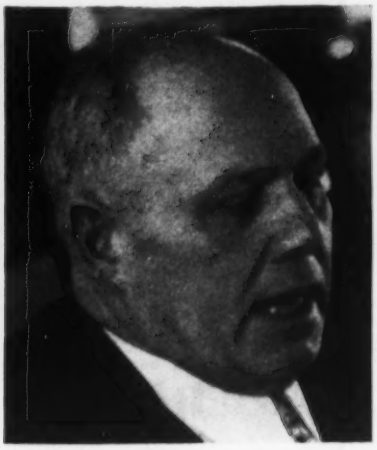
Wheeling

Wheeling's Warehouses are strategically located throughout the country to give you speedy, on-time delivery on all warehouse-stocked items. Consult the 'yellow pages' for the Wheeling warehouse or sales office nearest you. ***Warehouses:*** Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis. ***Sales Offices:*** Atlanta, Houston,

At the nation's capital—building tradesmen listened as . . .

President Richard Gray . . .
Launched a four-point program for new federal legislation.

Secretary James P. Mitchell . . .
Unwrapped the construction industry's Taft-Hartley proposals.



President George Meany . . .
Praised labor's efforts to serve the interests of all Americans.

Labor Unveils Its Legislative Program

Secretary of Labor James P. Mitchell last week officially unveiled the construction industry's proposals for amending the Taft-Hartley Act and gave his assurance that President Eisenhower will recommend the proposals to Congress.

Three in number, the proposed amendments would clarify the legal rights of contractors engaged in multi-employer bargaining, sanction employer contributions to jointly established apprenticeship training funds, and permit certification of construction unions without representation elections.

Mitchell addressed the opening session of the Third National Legislative Conference of the AFL-CIO Building Trades, which was attended by more than 2,500 building tradesmen representing nearly every state in the union. Held in Washington, D. C., the four-day meeting gave the building trades, under the leadership of President Richard Gray, a chance to explain their legislative program (see box on facing page) to—and to seek support from—every member of Congress.

The program, which was described by Gray as being "beneficial not only to building tradesmen but to all Americans," was adopted by the Executive Council of the Building and Construction Trades Department (AFL-CIO) in January.

• **Taft-Hartley**—Most complicated of all the proposals are the Taft-Hartley amendments, which rate the highest priority. For 10 years, the law has hung on the construction industry like an ill-fitting suit, subjecting many to the penalties of the law without its advantages.

The proposals are these:

• **The National Labor Relations Board would be authorized, on the joint petition of a contractor and a union, to certify the union as exclusive bargaining agent without a representation election, provided the petitioners have an existing labor contract or can show a history of prior bargaining.**

The certification would not be granted if a substantial number of employees assert the union is not a representative of the majority.

Effect of the provision would be to legalize the pre-hire contract—an employment agency type of labor agreement that has long existed in the construction industry, where representation elections are admittedly impractical and administratively impossible.

Because of this impossibility and the resulting inequity, the NLRB General Counsel has reportedly condoned use of the pre-hire contract, which, in the eyes of many is a stabilizing influence in the industry. By giving legal substance to an existing practice, the proposal would also minimize raiding by a rival union, union spokesmen say. Unless, however, the pre-hire contract, which usually embraces some form of union security, were specifically exempted from Sec. 14 (b), its legality would still be questionable in the 18 states with right-to-work laws.

• **Contractor associations would be considered an "employer" for collective bargaining purposes, thus more nearly matching the rights of management with those of labor.**

Although perhaps merely a restatement of present law, the proposal would clarify the rights of those engaged in association-wide bargaining and would give validity to such forms of economic pressure as an association lockout, where it is claimed that a strike against one is a strike against all.

• **Funds jointly established for training of apprentices and journeymen would be specifically exempted from the present prohibition against employer contributions to union representatives.**

Although such contributions are now in common use and have been a boon to a worthy cause, many feel they are illegal and expose employers to criminal prosecution.

The three proposals have been unanimously approved by members of the special construction industry joint committee (page 177) named by Mitchell last fall. They have the distinction of

being the first "negotiated" proposals for amending the law since its passage and represent what committee members thought might be realistically possible of achievement at the present time.

But this doesn't mean that the building trades will not continue to seek public support for future revisions to the law's secondary boycott, mandatory injunction and right-to-work provisions.

• **Davis-Bacon and school construction**—The same realistic appraisal of the present climate of opinion on Capiol Hill is also reflected in the building trades' approach to the prevailing wage law.

The crafts are simultaneously seeking modernization of the Davis-Bacon Act and retention of the prevailing wage provision in the school construction bills now before Congress. If the first were achieved, the second would be unnecessary—but, as in the case of the highway bill last year, the unions feel that "a bird in the hand is worth two in the bush."

For one of the Davis-Bacon proposals is extension of coverage to all direct and federally-assisted construction.

The argument is advanced that the

(*Continued on page 177*)

Legislative Program of the AFL-CIO Building Trades

1. **Corrective amendments to the Taft-Hartley Act to secure:**
   - (a) NLRB certification of construction unions without elections—
   - (b) Legalization of employer contributions to jointly established apprenticeship and training funds—
   - (c) Clarification of the collective bargaining rights of employer associations.

2. **Modernization of the prevailing wage law to:**
   - (a) Cover all direct and federally-assisted construction—
   - (b) Include fringe benefits, hours of work and overtime pay—
   - (c) Centralize enforcement.

3. **A comprehensive federal school construction program with a prevailing wage provision.**

4. **A full-scale federal housing program for a minimum of 2 million new units a year.**

JAMES McHUGH Construction Co.—C. E. YOUNGDAHL & COMPANY
General Contractors
6445 SOUTH PARK AVENUE • CHICAGO 37, ILLINOIS

January 9, 1957

Georgia Pacific Plywood Company
270 Park Avenue
New York, New York

Gentlemen:

The Stateway Gardens Project consists of six 17-story and two 10-story apartment buildings. They calls for 1,100,000 sq. ft. reinforced concrete ceilings and 1,200,000 sq. ft. reinforced concrete walls, for which we plan on using 150,000 sq. ft. of GPX plastic coated concrete form plywood manufactured by the Georgia Pacific Plywood Company. The buildings, designed by Holabird & Root & Burger, are unique, in that no columns or beams are used. The concrete walls constitute the supporting members.

Experience has proved to us that the many re-uses we get from GPX far exceeds what we might get with another form material. In addition, the smooth, uniform, concrete surface requires a minimum of pointing and no further finishing. The concrete surfaces will be painted, thus eliminating a costly plaster job.

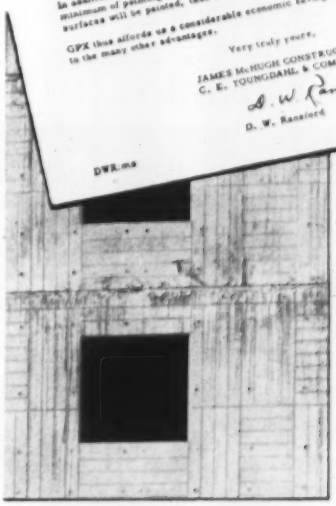
GPX thus affords us a considerable economic savings in addition to the many other advantages.

Very truly yours,

JAMES McHUGH CONSTRUCTION CO.-
C. E. YOUNGDAHL & COMPANY

D. W. Rensford

DWR:ms



Unretouched closeup of wall shows concrete condition immediately after stripping away forms. GPX Concrete Form absorbs practically no water, strips easily.

1 sq. ft. of GPX concrete form

covered every 17 sq. feet of surface concrete in Chicago's **$12,000,000**

STATEWAY GARDENS

Between State Street and the New York Central Railroad, from 35th to 39th Streets, a city within a city is rising. Stateway Gardens, with its parks, apartments and schools, will bring a better way of living to hundreds of Chicago families. It is a story of architecture, engineering and concrete. Concrete poured, stripped and poured again in the same lightweight, plastic-surfaced plywood forms. GPX Concrete Form was reused here **17** times and the same handy panels will serve many future assignments, each resulting in smo-o-o-th concrete, requiring little or no finishing.

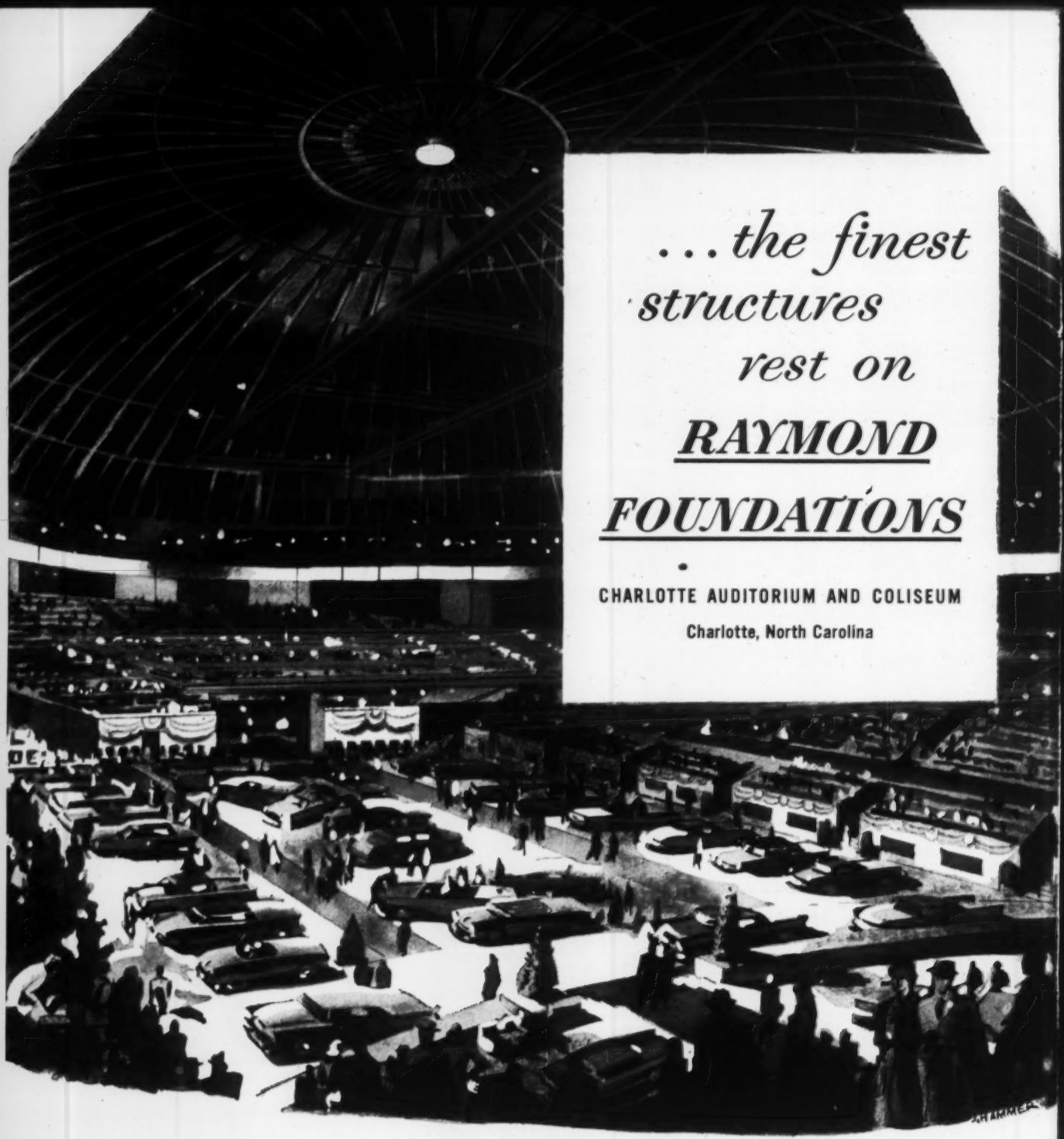
Send for literature: GPX CONCRETE FORM

Booklets including 8-page section on specialty plywoods, reprinted from Sweet's Catalog, available on request.

GEORGIA—PACIFIC
CORPORATION

60 East 42nd Street, New York 17, N. Y. ENR 357
Please send me free literature on GPX Concrete Form.

NAME_____
ORGANIZATION_____
ADDRESS_____
CITY_____ ZONE____ STATE_____



. . . the finest structures rest on

RAYMOND FOUNDATIONS

•

CHARLOTTE AUDITORIUM AND COLISEUM

Charlotte, North Carolina

GENERAL CONTRACTOR: Thompson & Street Co.
STRUCTURAL ENGINEERS: Severud-Elstad-Krueger
ARCHITECTS: A. G. Odell, Jr. & Associates

FOUNDATIONS FOR THE STRUCTURES OF AMERICA...

COMPLETE CONSTRUCTION SERVICES ABROAD

AROUND THE WORLD FOUNDED 1891

RAYMOND
CONCRETE PILE CO.

OUR 60th YEAR

140 Cedar Street • New York 6, N. Y.

Branch Offices in principal cities of the United States. Subsidiaries in Canada, Latin America and other countries.

You are cordially invited to send for our new Highway Brochure, which gives a detailed resume of how Raymond can help you and the National Highway Program. Just write Dept. E-5, Raymond Concrete Pile Co., 140 Cedar Street, N. Y. 6, N. Y.

growing trend toward indirect federal spending, including grants and guarantees, is defeating the original purpose of the law, which applies to direct spending only. That purpose was to prevent the influential purchasing power of the government from depressing local wage standards and from upsetting the economics of local communities. For this reason, piece-meal extension of the law is claimed to have constituted a necessary but unrealistic and time-consuming approach.

In another significant respect the law is also considered archaic. For since its passage 26 years ago, labor conditions have materially changed and the great growth of fringe benefits and of overtime pay and hours of work practices have gone unnoticed by the law, often putting union contractors at a competitive disadvantage in bidding on government construction. The building trades' proposal is to put all these practices on a prevailing wage basis—a trend that has already begun to gain favor at the state level.

At the same time, the building trades propose that the administration and enforcement of the act be made more effective by giving the Secretary of Labor full and complete responsibility for discharging the law.

But the interest in prevailing wages—and in job opportunities—does not define the limit of the building trades' concern about the urgency of school construction. Although the delegates were given a number of varying figures by speakers at the conference to point up the need for a federal program—a current shortage of 159,000 classrooms and the pending need for some 60,000 new classrooms a year—the principal emphasis was on the significance of the proper education of our youth to the nation's welfare.

• **Housing**—In both the fields of school construction and housing, the building trades have adopted the legislative aims of the AFL-CIO, presenting a united labor front on most—if not all—the present goals.

The key to the housing aims is a federal program that would stimulate construction of at least 2 million dwelling units a year, not only to stem the decline in homebuilding but to afford decent housing for low and middle-income groups, for racial minorities and for the elderly.

Integral parts of the program include new monetary policies—such as a roll back of FHA interest rates and direct loans for GI housing—with limitations on the "charges" of lending institutions, a more effective public-housing program, the financing of a cooperative middle-income housing program, and expanded activities in the fields of urban redevelopment and slum clearance.

The effectiveness of last week's efforts of the building trades remains to be seen. But the delegates went about their task with the firm conviction that they were simultaneously serving the best and nonpartisan interests of all citizens as well as of their own members and that an active and constructive concern with legislative activities is essential to the future welfare of the trade union movement and of the nation as a whole.

And not unmindful of the possible effects of the current Senate investigation of labor activities, AFL-CIO President George Meany forcefully warned the delegates not to let the labor movement be condemned by the misdeeds of a small minority nor to allow hypocritical or misdirected "concern for purity" to generate a rash of punitive laws or to hamstring labor's efforts to obtain fair and progressive legislation.

Joint Committee for Taft-Hartley Act Amendments

Management:

F. Rooney, *Associated General Contractors of America*
C. Haxby, *National Constructors Association*
P. Geary, *National Electrical Contractors Association*
R. Lockwood, *National Association of Home Builders*

Labor:

R. Gray, *AFL-CIO Building Trades Department*
M. Hutcheson, *Carpenters International Union*
P. Schoemann, *United Association of Plumbers and Steamfitters*
J. Lyons, *Iron Workers International Union*

California Contractors Take New Look at Bargaining

Current wage demands of union carpenters in 42 northern California counties for an 18.9% wage increase have set in motion an employer effort to re-examine local collective bargaining procedures and the wage patterns.

Leader of the effort is the newly-formed Construction Industry Employers Council, which is an alliance of the East Bay General Contractors Association and the Associated Home Builders of the Greater East Bay.

Seeking a "frank discussion of wage demands among buildings basic crafts," the council called an "emergency" meeting last week of construction employers and employer associations in all segments of the northern California construction industry.

Among those asked to attend were the Northern and Central California Chapters of the Associated General Contractors, the construction industry's traditional bargaining agents, in order that all phases of the industry could present their opinions.

Northern California carpenters have already presented the two AGC chapters with a 23-point wage demand, embracing a 37½-cent wage increase, a 10-cent pension fund contribution, a 10-cent vacation fund payment and a number of other benefits.

"These wage demands alone," the president of the Construction Industry Employers Council said, amount to an increase of 18.9% and could well price the northern California construction industry out of business.

In addition, he noted, the operating engineers, teamsters, cement masons and laborers have served notice to open their existing contracts on May 1, although they have not yet made any specific wage demands.

Violation of Union Rules No Bar to Work Permits

Local 9 of the International Union of Operating Engineers in Denver has been told by the National Labor Relations Board that failure to abide by union rules affords no grounds for revoking working permits issued to non-union workers.

The regional office of the NLRB issued the ruling in a case involving two Denver men working for employers holding labor contracts with the local union.

Principals were William Allen, an oiler for Ready Mix Concrete Co. of Denver, and E. Espinoza, roller man for Rocky Mountain Oil Paving Co. Both had been issued permits to work for the firms.

Edmond L. Benefiel, business manager of the local, said the union revoked the permits after the two men allegedly refused to comply with union rules.

The NLRB, on appeal by the men, ruled that the Taft-Hartley Act required the issuance, and prohibited the revocation, of the working permits, even though the men did not abide by the rules applicable to union members.

Benefiel said the union would not appeal.

(*Labor continued on page 178*)

Wage-Hour Coverage Is Extended

Construction of Lake Pontchartrain Causeway gives rise to a court decision with broad implications

In a decision of considerable importance to contractors and construction workers, the Federal Court of Appeals in New Orleans, La., has ruled that three different groups of workers employed on the recently completed 25-mile bridge across Louisiana's Lake Pontchartrain are entitled to the hours and overtime pay protection of the Fair Labor Standards (Wage-Hour) Act.

The three groups of workers were those employed on the actual construction of the bridge, those producing materials used in the construction, and those employed on the construction of supply plants for the project.

The decision was issued in a case brought by employees against Brown & Root, Inc. of Houston, Texas, and T. L. James & Co., Inc. of Ruston, La., contractors on the huge state-financed project. Since the case presented questions of general importance in the application of the law to construction workers, Secretary of Labor James P. Mitchell joined in the appeal to support the claim of the workers.

"The coverage questions involved," said Solicitor of Labor Stuart Rothman, who represented Mitchell before the appellate court, "affect construction workers on highway improvement projects generally." The court's decision sustains the Labor Department's view that the federal law applies to construction workers on all aspects of a highway project designed to connect with and to facilitate the flow of traffic on the interstate highway network, including off-the-road workers engaged in fabricating the materials and component parts and those employed in the construction of necessary plant facilities.

In resisting the claims of the employees for back wages, the contractors contended that they were not engaged in interstate commerce but in a purely local activity because the bridge was an entirely new structure and was financed by local rather than federal funds. The court rejected these arguments, pointing out that the Lake Pontchartrain Causeway would, upon completion, be a link in the surrounding network of interstate highways, and that public funds, state or federal, are not essential to the creation of instrumentalities of interstate commerce.

Approaching the problem from the practical side, as the U.S. Supreme Court dictated in the Vollmer Case, the court concluded that the fabrication of materials and parts for the causeway, such as prestressed concrete, was also in interstate commerce and that workers engaged in these enterprises were also covered by the law.

As to those workers who had been employed in constructing the necessary plant facilities for the fabrication of bridge parts, the court said that they "were, in effect, also building the bridge." It rejected the contractors' contention that such a plant is similar in nature to a new factory building and was designed as a permanent plant rather than for the construction of the causeway alone.

"There can be no question whatsoever," the court said, "that this plant, or a similar lakeside one, was indispensable to performance of this construction contract. The only reason it was built where it was and when it was, was because of this contract. It is an integral part of the whole project . . . and not the mere creation of a manufacturing plant from which goods would be shipped for later consumption." That it would involve no salvage loss and would have future utility, the court noted, did not make it any less a part of the causeway project, which was subject to the law.

State Council Sought

Building trades unions in Michigan will unite

First steps in the creation of a 175,000 member Michigan Building Trades Council were taken late last month in Lansing, Mich., when representatives of the state's 19 AFL-CIO craft unions were directed to draw up preliminary plans for the new organization.

Some steam was taken out of the move to replace the existing Michigan Conference of Building Trades Councils, however, when James R. Hoffa, an international teamster vice president and Detroit teamster chief, said his 10,000 member Michigan union would be in no hurry to join the new council.

Hoffa, against whom the new move reportedly was aimed, told the 200 delegates attending a two-day meeting billed as a state building trades legislative conference: "The teamsters don't want to join any central body until we know what it will cost, what it will do and whether or not our jurisdiction will be protected."

The proposed organization would give Michigan's building tradesmen a united front, delegates said, for fighting jurisdictional battles, a stronger voice in politics and a better bargaining position.

One reason for forming a state building trades council would be to free the building trades groups from control of the Michigan Federation of Labor. A split between the federation and the tradesmen has been widening since the general election last fall, when the two groups could not agree on Gov. G. Mennen Williams' candidacy for re-election.

Plans were discussed at the two-day meeting to employ a full-time legislative representative in Lansing. Most prominently mentioned for the post was Andrew Virtue, who has been active in the bricklayers' apprenticeship training program and who is secretary of the Michigan Conference of Building Trades Councils. Lucien M. (Boots) Weir, secretary-treasurer of the Detroit District Council of Carpenters, is considered most likely candidate for presidency of the new organization.

Bricklayers' Local Faces Charge of Illegal Strike

Unfair labor practice charges have been filed with the National Labor Relations Board by the Rochester, N. Y., Builders Exchange against Local 11 of the Bricklayers, Masons and Plasterers' International Union in a jurisdictional dispute that has halted construction work on a local church.

Work on the project was stopped last month, shortly after the bricklayers walked off the project because the carpenters had been assigned the task of laying concrete slabs.

According to John Richards, executive secretary of the Builders Exchange, the bricklayers have been charged with illegally causing a jurisdictional strike and engaging in a secondary boycott.

The dispute was referred to the National Joint Board for the Settlement of Jurisdictional Disputes, which directed that the bricklayers be ordered back to work.

Lunch Hour Dispute Stalls Negotiations

A week-long halt of Denver, Colo., construction ended last week, when 350 striking members of Cement Masons Local 577 agreed to return to work until April 14 while efforts to reach a new labor contract continue.

Major stumbling block is a request

by contractors to revise a lunch hour provision in the old contract. Meanwhile, according to E. V. Jones, chairman of the bargaining committee for the Associated Building Contractors of Colorado, and Jack Saunders, union president, the men are working without a contract.

The contractors are seeking a provision for staggered lunch hours for cement finishers.

Union members have been collecting overtime for working through the normal lunch hour in order to finish work before the concrete sets. Under a staggered lunch hour provision, they would lose this overtime.

Some 8,000 construction workers were idled during the strike, when all major projects were picketed.

Poor Labor Relations Blamed on Contractors

Detroit suffers more union trouble in the painting and decorating business than any other city in the nation, according to L. M. Raftery, general president of the painters union. The reason, Raftery said, is "too many legal minds among contractors".

The statement was made at a joint press conference with Ray Elvart, head of the Painting and Decorating Contractors of America, following the association's annual convention in Detroit last month.

In blaming contractors for the Detroit situation, Raftery said contractors are too apt to run to court with labor disputes instead of working out sensible solutions with labor.

Most of the city's labor troubles, he noted, stem from jurisdictional rather than wage disputes.

Labor Briefs . . .

• **Picketing**—The Supreme Court of the State of Colorado has upheld peaceful picketing of a nonunion construction site by the Pueblo Building Trades Council even though the contractor had no dispute with its employees or with the council. Protection of union wage scales justified the picketing and the law doesn't require a "dispute" stemming from an employer-employee relationship.

• **Mutual assistance**—New tactics in mutual assistance between unions are being planned by the Teamsters Joint Council in New York City. Council President John J. O'Rourke has warned that the council will lend strike aid only to other unions that agree to turn over to the teamsters those members the teamsters feel properly belong to them.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: March 27, 1957

Washington Suburban Sanitary Commission
Inquiry No. 009474

FURNISHING AND DELIVERING MANHOLE FRAMES, COVERS AND STEPS, INLET FRAMES AND GRATES, LAMPHOLE FRAMES AND COVERS

Sealed proposals for furnishing and delivering twelve (12) W.S.S.C. Standard Square Inlet Frames and Grates; fifty (50) W.S.S.C. Lightweight Manhole Frames & Covers marked "W"; five-hundred (500) W.S.S.C. Standard Manhole Frames and Covers marked "S"; fifty (50) W.S.S.C. Standard Manhole Frames and Covers marked "W"; one-hundred (100) W.S.S.C. Standard Lamphole Frames & Covers marked "S"; ten (10) W.S.S.C. Standard Lamphole cover (only) marked "S"; twenty-four (24) Watertight Manhole Frames & Covers complete and five-thousand (5,000) W.S.S.C. Standard Manhole steps will be received in the office of the Purchasing Agent, Room G-13, of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland, until Wednesday, March 27th, 1957 at 10:30 A. M. Eastern Standard Time, at which time and place they will be publicly opened and read.

Specifications may be obtained from S. Z. Salsberry, Purchasing Agent of the Commission.

T. Earle Bourne, Chairman
Frank L. Hewitt, Jr., V-Chairman
J. Norman Ager
James B. Bland
Willard A. Morris
L. S. Ray
Commissioners

Attest:
John T. Bonifant
Secretary

Bids: April 9, 1957

Contract BT-120.005

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
ALTERATIONS TO ROOMS NOS. 1205 AND 1218

Sealed proposals for performing alterations to Rooms Nos. 1205 and 1218 on the Main Concourse of the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 9, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 21, 1957

Bids: April 2, 1957.

Power Authority of the State of New York

BARNHART-PLATTSBURGH TRANSMISSION PROJECT
ADVERTISEMENT FOR PROPOSALS FOR
THE FURNISHING AND DELIVERY OF HIGH VOLTAGE DISCONNECTING SWITCHES
SPECIFICATION NO. PA-6-29
CONTRACT NO. TP5

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of high voltage disconnecting switches and appurtenances for the Barnhart-Plattsburgh Transmission Project and delivery thereof f.o.b. destinations, until 10:30 A.M., Eastern Standard Time, on the 2nd day of April, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be received for thirty (30) high voltage disconnecting switches and appurtenances in accordance with the bidding schedule. All disconnecting switches will be installed by others, but services of erecting engineers shall be provided by the manufacturer when and if required. Delivery of the disconnecting switches will be required June 1, 1958.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 240 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours; and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

U. S. Government

Department of Commerce, Bureau of Public Roads, March 6, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., APRIL 19, 1957, for Mississippi Forest Highway Project No. 34-A, Mississippi National Forest, Sharkey County, Mississippi. Steel I-beam and concrete bridge on concrete pile substructure over Little Sunflower River, three quadruple box culverts, and approaches on the Kelso-Holly Bluff Road. Aggregate length: 1.942 miles. The approximate quantities of the more important items are as follows: 91,280 cu. yd. Excavation and Borrow, 1,635 cu. yd. Concrete, 221,700 lb. Reinforcing Steel, 154,000 lb. Structural Steel and 2,110 lin. ft. Concrete Piling. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. H. J. Spelman, Regional Engineer.

OFFICIAL PROPOSALS

Bids: April 9, 1957

Power Authority of The State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF BRIDGES
ON
STATE HIGHWAY ROUTE 345 AND
FRANKLIN ROAD IN WADDINGTON
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-111025
ST. LAWRENCE CONTRACT NO. 33

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of bridges at Waddington on State Highway Route 345 and Franklin Road, St. Lawrence County, New York, until 10:30 A. M. Eastern Standard Time on the 9th day of April, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

The work includes the construction of approximately 0.22 mile of highway and two bridges, each approximately 139 feet long. Alternate bids of either structural steel beams or precast, prestressed concrete beam for the superstructure of each bridge may be submitted.

All work shall be completed on or before August 1, 1958.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario and may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

PA-5-11025

W. S. CHAPIN
General Manager

Bids: April 9, 1957.

New York City Invites Bidders Pumping Plant Demolition

SIX 20 M.G.D., 600 FT. LIFT (5 STAGES) VERTICAL MOTOR-DRIVEN PEERLESS PUMPS; SIX 4000 VOLT, 900 R.P.M., 2500 H.P. SYNCHRONOUS MOTORS, COMPLETE WITH MOTOR CONTROLS AND AUXILIARY EQUIPMENT; TWO B.P. 6000# CHLORINATORS WITH EVAPORATORS AND SCALES; HOISTING, HEATING AND VENTILATING EQUIPMENT. PUMPS AND EQUIPMENT IN EXCELLENT CONDITION; FIVE YEARS OLD, AND OPERATED FOR SEMI-MONTHLY TEST RUNS ONLY.

Sealed bids will be received by the Commissioner of Water Supply, Gas and Electricity, at room 2351, Municipal Building, Manhattan, N. Y. 7, N. Y. as follows until 10:30 A. M. Tuesday April 9-1957. For furnishing all labor and material necessary and required for removing all equipment from and demolishing the Hudson River Pumping Station near Chelsea, Dutchess County, N. Y. ALL MATERIALS AND EQUIPMENT IN, OR FORMING PART OF THE STATION SHALL BECOME THE PROPERTY OF THE CONTRACTOR. Prospective bidders may obtain a copy of the contract documents and specifications by sending a certified check for $1.00 made payable to the order of the Comptroller of the City of New York, to the Department of Water Supply, Gas and Electricity, Room 2351 Municipal Building, New York 7, N. Y.

OFFICIAL PROPOSALS

Bids: March 29, 1957

Structural Steel for the Miami Beach Exhibition Hall

NOTICE TO STEEL CONTRACTORS
OFFICE OF THE CITY MANAGER, Miami Beach, Florida, March 6, 1957.

Sealed Proposals will be received at the above Office until 10:00 A.M. on the 29th day of March, 1957, at which time and place they will be publicly opened for the furnishing, fabricating, transporting, delivering and erecting of approximately One Thousand (1,000) Tons of Structural Steel for the Miami Beach Exhibition Hall in the City of Miami Beach, County of Dade, State of Florida, as required by the City Council of said City.

All work is to be done in accordance with the Plans, Definitions, General Provisions, Special Provisions, Special Requirements, Specifications, Proposal and Contract of the City of Miami Beach.

A bid bond or certified check, cashier's check, treasurer's check or bank draft of any national or state bank, in the amount of two and one-half (2½) percent of the total amount of the Proposal and made payable to the City Clerk must accompany each Proposal.

Plans and Specifications are on file and may be examined and secured on application at the Office of the City Engineer by making a deposit of Fifty ($50.00) Dollars, which deposit will be returned provided said Plans and Specifications are returned in good order.

The right is reserved to reject any or all Bids.

CITY COUNCIL OF MIAMI BEACH
(Signed) Claude A. Renshaw
City Manager

U. S. Government

Bids: June 11, 1957

Government of Iraq Electrification of Basrah Power Project Contract No. (1) Steam Turbine Generators and Auxiliary Equipment

The Development Board and Ministry of Development of the Government of Iraq invite tenders from qualified firms for the supply and delivery, erection and supervision of operation of three-15,000 KW Steam Driven Turbo-Generators for Basrah Power Project, Southern Iraq.

Full information regarding this tender can be obtained on and after March 12, 1957 from Iraq Embassy, Washington.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12 noon, local time, on June 11, 1957.

Minister of Development

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4874) will be received at Superior, Nebraska, until April 23, 1957, for furnishing labor and materials for earthwork and structures for Courtland West Canal, Station 0+00 to Station 517+42; and laterals, wasteway, and drains, Missouri River Basin Project, Nebraska-Kansas. Location near Courtland, Kansas. Principal items are 710,000 cu. yds. excavation; 2,210 cu. yds. concrete; 11,900 lin. ft. concrete pipe; various metal slide gates and miscellaneous metalwork; and other work. Completion times 420 and 570 days. For particulars, address Bureau of Reclamation, P. O. Box 431, Superior, Nebraska; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 2, 1957

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
POWERHOUSE
FENESTRATION AND ALUMINUM WORK

SEALED TENDERS, in quadruplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked:

"TENDER FOR ST. LAWRENCE POWER PROJECT POWERHOUSE FENESTRATION AND ALUMINUM WORK FOR SWITCHGEAR BUILDING, ERECTION BAY AND ADMINISTRATION BUILDING"

will be received up to 4:30 o'clock p.m., Eastern Standard Time on

TUESDAY, April 2, 1957

for the supply and installation of aluminum facing, exterior doors, windows and glazing for the Switchgear Building, Erection Bay and Administration Building.

Copies of the tendering documents may be obtained on and after MARCH 12, 1957 at the office of the Director of Supply, 620 University Avenue, Toronto 2, Ontario, on payment of $10.00 for each set. This charge will not be refunded.

Tendering documents may be inspected at the above address and at the offices of the following:

The Commission's Field Office, Cornwall, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts.

Each tender must be accompanied by a certified cheque drawn on a Canadian chartered bank for a sum calculated as follows:

On tenders up to $500,000.00 the sum shall be 10 per cent of the total amount of the tender; on tenders over $500,000.00, the sum shall be 10 per cent of the first $500,000.00 and 5 per cent of the excess over $500,000.00. Provision for the return of the cheque appears in the tendering documents.

The successful tenderer may be required to furnish a performance bond, in the form approved by the Commission, and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission, for one hundred per cent (100%) of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

E. B. Easson
SECRETARY

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4872) will be received at Rupert, Idaho, until April 18, 1957, for furnishing labor and materials for earthwork and structures for Main Canal East, Michaud Flats Project, Idaho. Location near American Falls, Idaho. Principal items are 487,000 cu. yds. excavation; 190,000 cu. yds. compacting embankments; furnishing and laying 10,480 lin. ft. reinforced concrete culvert and pressure pipe; and other work. Completion time 330 days. For particulars, address Bureau of Reclamation, Rupert, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: March 26, 1957

Louisville Water Co. Clarifier Basin Construction

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the Louisville Water Co. at its office in Louisville, Kentucky, up to 10:00 A.M. March 26, 1957 on the following contracts:

CONTRACT A—Clarifier Basins—General Construction
CONTRACT B—Clarifier Basins—Basin Equipment

The plans and specifications are on file and may be examined at the office of the Louisville Water Co., and at the office of Alvord, Burdick & Howson, Engineers, 20 N. Wacker Drive, Chicago 6, Illinois.

Plans and specifications may be obtained by depositing Fifteen Dollars ($15.00) with the Louisville Water Co. or Alvord, Burdick & Howson. The deposit will be refunded to bidders who submit a bona fide bid and return the plans and specifications in good condition at the time bids are taken. Additional copies of the plans and specifications for use of subcontractors may be bought for the same price, with no refund.

Each bidder shall deposit with his proposal a certified check in favor of the Louisville Water Co. in the amount of five per cent (5%) of his bid, which shall be forfeited in case the contractor fails to enter into contract with good and sufficient bond within ten (10) days after the contract has been awarded to him.

No proposal may be withdrawn after the time for opening bids is past.

The right is reserved to reject any or all bids or waive any informality in any bid, and to accept any considered advantage to the Louisville Water Co.

LOUISVILLE WATER CO.
By: B. E. Payne
Chief Engineer & Supt.

Bids: April 9, 1957

Contracts 454 and 455

WEST DELAWARE TUNNEL

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 9, 1957, for the following two contracts for the construction of the easterly portion of the West Delaware Tunnel of the Delaware system, comprising about 19 miles of concrete lined pressure tunnel, circular in section and 11 feet 4 inches in finished diameter, and Shafts 5 to 7 inclusive, 14 feet in diameter, which will be circular in section and lined with concrete, all as set forth in the specifications:

CONTRACT 454, for the construction of about 60,000 linear feet of tunnel, including Shaft 5, approximately 760 feet deep, and Shaft 6, approximately 780 feet deep, located in the Towns of Rockland and Neversink, Sullivan county, New York.

CONTRACT 455, for the construction of about 42,000 linear feet of tunnel, including Shaft 7, approximately 650 feet deep, and the tunnel outlet, located in the Town of Neversink, Sullivan county, New York.

A bidder on both of these contracts may, if he so desires, specify in the bid form of either or both contracts, that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him.

Pamphlets of the two contracts containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312 at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

OFFICIAL PROPOSALS

Bids: April 1, 1957

Notice Inviting Bidders New London, Conn., Mar. 8, 1957

Notice is hereby given that the Commissioners of Steamship Terminals of the State of Connecticut will receive at the Office of the Engineer-Secretary, State Pier, New London, Conn., sealed bids or proposals for removal of earth, rock and boulders from the West Slip of the State Pier as shown to elevation of —35, until 2:00 PM of Apr. 1, 1957; then and there to be publicly opened and read. Bids must be made on the form provided for the purpose and must conform to the requirements of the "Instructions to Bidders". Said work must be done in strict conformity to the plans and specifications which are on file at the State Pier. Reference is hereby made to said plans and specifications for full particulars and descriptions of said work. Copies of said plans and specifications will be furnished upon application.

Each bidder shall submit with the proposal a satisfactory surety bond or certified check by a responsible bank or surety company and payable to the order of the Commissioners of Steamship Terminals of the State of Connecticut, New London, Connecticut, for an amount not less than five percent of the aggregate sum of the bids as a guarantee that the bidder will enter into the proposed contract if the same is awarded to him.

The bidder shall furnish a certified check drawn for twenty-five dollars to guarantee that each set of plans with specifications taken out will be returned in good condition. The full deposit will be returned to those submitting bona-fide proposals provided the plans and specifications are returned within five (5) days of the opening of the bids. One half of the above deposit of those who have not submitted a bona-fide proposal will be returned.

The said Commissioners reserve the right to accept any bid, and to reject any or all bids as they may deem for the best interests of the State of Connecticut.

Louis C. Wool
Chairman

Joseph S. Rosenthal
Engineer-Secretary

OFFICIAL PROPOSALS

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Soils Engineer—prefer man with MS in soils about 1945 or 1946—to head up a design group in a firm of consulting engineers specializing in design of dams. Must be top-notch design engineer and supervisor. Salary open. Location Midwest. P-3942, Engineering News-Record.

Concrete Engineer for mix design. Capable of supervising Material Testing Laboratory for work in southern Idaho. Ample relocation allowances. Send resume to F. C. Torkelson Company, Box 185, Idaho Falls, Idaho.

Hydraulic Engineers experienced in the supervision of design of water projects, including large diameter pipe lines, pumping stations, storage reservoirs and automatic control devices. O'Brien & Gere, 400 East Genesee Street, Syracuse, New York.

Civil Engineers to work with consulting engineering firm. Long established municipal consulting firm desires to secure civil engineers for permanent positions. Experience in water and sanitation required. Offices located in very desirable small college community in Colorado area. Expansion of firms operations provide unlimited opportunities for advancement for properly qualified engineers. Firm desires to employ engineers with from one to fifteen years of experience. Salaries $5,100 to $6,600. Please give experience and full details in reply. Replies will be held confidential if requested. P-4371, Engineering News-Record.

Highway and Bridge Engineers—Designers. Experienced, for Permanent Positions in our New York Office. Excellent Salary Plus Overtime. Air mail resume to Farkas & Barron, Consulting Engineers, 5 Beekman Street, New York 38, N. Y., or call BEekman 3-8387.

Wanted—Dirt Superintendent to work for long established Illinois Contractor, operating in Illinois, Kentucky, Missouri. Salary commensurate with experience and ability. P-4323, Engineering News-Record.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

Soils, Asphalt & Concrete Inspectors . . . Field & Lab Tech; also Party Chief & Instrument Man. O'seas. Mild Climate. Write Mr. Levy, Patchen & Zimmerman, 120 Greenwich St., NYC 6. REctor 2-4187.

Teaching position in civil engineering and mechanics starting next September. Rank and salary dependent on qualifications. Address Department of Civil Engineering, Clarkson College of Technology, Potsdam, New York.

Engineers with experience in municipal and industrial waste collection and treatment, or projects of related type. Midwest consulting firm with long established practice limited to sanitary engineering projects. Please send full details of education and experience, references and approximate salary requirements. P-4461, Engineering News-Record.

Engineer capable of layout and takeoff for Western New York Paving contractor. Reply P-4154, Engineering News-Record.

Superintendent for Western New York paving and excavating contractor. Reply P-4155, Engineering News-Record.

Mining and Smelting Engineer. For a mature experienced man a permanent responsible position is available, with large long-established firm. Headquarters Detroit and Windsor, Ontario. Please send full resume. In confidence if requested, to P-4518, Engineering News-Record.

Engineering Draftsman, Sanitary Engineering experience preferred. Permanent. Send vital statistics, experience, education, salary expected, samples of workmanship and date of availability to Russell & Axon, Box 1431, Daytona Beach, Florida.

Wanted. A.I.A. Architect. Excellent opportunity in Baltimore, Md., for right man between the ages of 30 and 40. Please send complete resume. P-4525, Engineering News-Record.

Sanitary Engineer. Responsible designer, capable taking charge design small sewage treatment plants. Cleveland, Ohio. P-4553, Engineering News-Record.

Sanitary Engineer, experienced in design sewage treatment works. Permanent. Upstate New York community also Engineer Assistant for layout, inspection sewer construction. Poughkeepsie, New York area. Write experience, salary, availability. P-4577, Engineering News-Record.

Public Works Department Engineer and Superintendent in Western Massachusetts community, salary open, based on experience. Apply Box P-4578, Engineering News-Record, submitting resume of education and experience.

Superintendent Wanted: Man experienced in construction of High Class Monumental Buildings. Only man with great depth of actual experience in this class of work should apply. P-4570, Engineering News-Record.

Construction Engineer, 30, German, 9 years experience in field supervision, seeks position. Preferable foreign assignment. L. Loser, 759 Querbes, Montreal.

Equipment Maintenance Superintendent. A challenging position is now open to the right man to take charge of one of the largest fleets of on and off highway trucks, bulldozers, cranes, shovels, and other contractors' equipment in the United States. Please write, giving employment history and salaries earned. P-4614, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant | **Civil Service Opportunities . . .** | **Employment Agencies**
Positions Wanted | **Selling Opportunities Wanted** | **Employment Services**
Part Time Work | **Selling Opportunities Offered** | **Labor Bureaus**

DISPLAYED —RATES— **UNDISPLAYED**

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$2.10 per line, minimum 3 lines. To figure payment count 5 average words as a line.
Position Wanted ads are ½ of above.
Box Numbers—counts as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS or inquiries to Classified Adv Div of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36, N. Y. April 4th Issue Closes March 25th

SALES ENGINEER

A major steel company has need for sales engineer to promote and sell fabricated products in New England states. Excellent opportunity for man 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-3808, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N. Y. 36, N. Y.

SPECIFICATION WRITERS

Established Chicago organization wants specification writers experienced in civil engineering and building work; must be U. S. citizen and resident of Cook county. Steady work; liberal pension and vacation plans. Write giving particulars as to age, education, and experience. Starting salary $600.00 per month.

P-4637, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ASSISTANT CHIEF ENGINEER

C.E. experienced in structural steel detailing and design, checking and estimating to understudy for Chief Engineer with long established structural steel fabricator. Submit detailed resume and photograph.

C. E. MORRIS COMPANY
745 Curtis Ave. Columbus 3, Ohio

POSITIONS VACANT
(Continued from preceding page)

Engineer: First class only; expd in field layout work on construction projects. P. O. Box 126, Wilmington, Del.

Bookkeeper: First class only; administrative and typing ability helpful. P. O. Box 126, Wilmington, Del

Wanted: Strip mine superintendent. Take full charge strip mine operation, location West Virginia. Must have complete knowledge of heavy coal stripping equipment and previous experience in strip minning operations. Send past reference in first reply. P-4606, Engineering News-Record.

Asst. or Assoc. Professor to teach undergraduate Hydraulic and Sanitary subjects. Twelve-month appointment. Write C. E. Dept. Head, College of Engineering, The University of Akron, Akron 4, Ohio.

Graduate engineer with five or more years experience in the design and installation of electrical systems, air conditioning, and heating of commercial buildings. Position available with national retail Store establishment. Salary open. Give references, education and experience in your resume. Send qualifications to: P-4589, Engineering News-Record.

Gunite Estimator and a Gunite Superintendent —Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Estimator-Project Manager or Assistant for building construction. Well established, growing Company in Rhode Island. Three to Five years contractor experience desirable. Good opportunity for advancement. P-4631, Engineering News-Record.

Wanted—Experienced Sanitary Engineer to head a State Water Pollution Control Program. Salary open. Reply stating educational and experience background and salary expected. State Dept. of Health, Division of Personnel, 1000 State Capital Building, Lincoln 9, Nebraska.

Draftsman—experienced on structural steel detailer. Permanent position in Jersey coast resort town. Apply Park Steel & Iron Company, Evergreen & R.R. Aves., Bradley Beach, N. J.

POSITIONS VACANT

City Engineer Wanted: general municipal engineering and administrative duties. Thoroughly experienced. Medium size growing city. Must be registered in Ohio. Salary $7800 per year. Write experience resume to Service-Safety Director, City Building, Mansfield, Ohio.

SELLING OPPORTUNITY OFFERED

Flooring Agents wanted: Detroit auto stamping mill now making steel anchor floor plates. Widely used by industry. Exclusive territories. Write on your letterhead. RW-4622, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried Positions $6,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

POSITIONS WANTED

Construction and Expediting Engineer completing four (4) years of expediting material and equipment and coordinating same with field for construction of $190 million Industrial Plant. Sixteen (16) additional years of light and heavy construction experience working as, foreman on highway construction, Field Engineer and Asst. Superintendent on building construction and Project Engineer on Dam and Building Construction. Excellent organizational abilities. Available in six (6) weeks. PW-4437, Engineering News-Record.

Sanitary & Hydraulic Engineer, 32, MSCE, Registered N. Y. & N J, 11 yrs. experience in water supply, sewerage and drainage facilities design and construction and office administration, U.S. and overseas. Know Spanish. Presently on European assignment, available in 60 to 90 days, as project engineer or for other supervisory job, foreign or U.S. PW-4397, Engineering News-Record.

Bridge Superintendent—Reg. Engineer—Age 30, 5 years sup. exp.—Estimate, Construct, Manage. Desires position with Western Contractor and opportunity to grow. Resume on Request. PW-4414, Engineering News-Record.

Electrical Construction Superintendent 25 years experience heavy construction. PW-4429, Engineering News-Record.

Structural Engineer, BCE, MCE, Reg. P.E.— N. Y., Age 26, 5 years experience in design and supervision of design, desires position overseas, office or field, in South America or Europe. PW-4427, Engineering News-Record.

Construction manager desires connection with out-of-state contractor planning to do business in Alabama. 30 years experience in field and office, part of this time conducting own business. PW-4365, Engineering News-Record.

Superintendent Brickmason Foreman experience in industrial, commercial and residential construction knowledge of estimating quantity take-off. PW-4354, Enginering News-Record.

Bridge Engineer, M.C.E., P.E., Member A.S.C.E., 25 years experience, 10 years with State Authority as Chief Bridge Engineer in charge of design, specs and construction. Available with short notice. PW-4348, Engineering News-Record.

POSITIONS WANTED

Draftsman, diversified structural-concrete experience, desires re-locate Washington, D. C., area. PW-4321, Engineering News-Record.

Project Manager-Superintendent, Heavy & bridge construction, 19 years experience. $200. PW-4332, Engineering News-Record.

Superintendent — Engineer — Estimator — Highways—44—BS in CE., PE—Penna—supervision, estimating and layout on Earthwork, Drainage, Structures and Paving. PW-4504, Engineering News-Record.

Construction Engineer BCE—9 years experience in building construction, field engineer, assistant superintendent, estimating, and expediting. PW-4464, Engineering News-Record.

Professional Engineer, wide experience, will prepare Budget Cost Estimates from outline plans and for Spec. for the profession, or Competitive L.S. estimates for Contractors. PW-4493, Engineering News-Record.

Plant Engineer. Desires to make a change to a more comfortable climate. Fifteen years heavy experience in top level positions with outstanding firms. Experience in progress and production control, cost analysis, procurement, estimating, high temperature pressure piping design, thermal expansion problems including furnace manifolds, pressure vessel and flange design, welding and weld tests, sanitary waste disposal design, field liaison, supervision, coordination and drafting room practice. Minimum acceptable salary 10,000 dollars per year. Interested parties may secure a resume by writing on company stationery to PW-4447, Engineering News-Record.

Registered Engineer, 32 single, MS Soils, 8 years structural and foundations background, including dams. Desires overseas position as Soils Engineer. PW-4579, Engineering News-Record.

Detailing, estimating, design, structural steel. Buildings, bins, chimneys, checked work 20 years experience, bids submitted; Pennsylvania. PW-4580, Engineering News-Record.

Construction Company Manager. C. E. and Practical background. Long record of profitable operations with well known General Contractors. Available at level of General Manager or Owners Assistant. Complete information on request. PW-4545, Engineering News-Record, 520 No. Michigan Ave., Chicago 11, Ill.

Superintendent or Construction Manager: Thoroughly experienced in handling all types of projects from the bidding to the completion stage. Will go anywhere. Available immediately. PW-4543, Engineering News-Record.

Executive-Management Capacity. Reg. P.E. 25 years background in heavy Construction as Project Manager, Supt. Estimating, Planning, Expediting, and coordination of sub. contractors Home and abroad. PW-4537, Engineering News-Record.

Graduate Civil Eng., 30, experienced in highway and concrete, practical background, desires responsible position with contractor. German graduation, no U. S. citizen. PW-4538, Engineering News-Record.

Purchasing: Experienced in heavy construction, equipment and camp supplies. PW-4539, Engineering News-Record.

Construction Superintendent, 25 years experience as field Superintendent construction large Industrial Plants, Bridge and Public buildings. Can take off quantities and handle sub contractor. Prefers school building and concrete bridges. Can go anywhere. PW-4522, Engineering News-Record.

(Continued on opposite page)

Don't forget

THE BOX NUMBER

when answering the classified advertisements in this magazine. It's our only means of identifying the advertisement you are answering.

POSITIONS WANTED
Continued from opposite page

Maintenance Superintendent. Heavy Earth-moving & Paving Equipment. Preventive Maintenance organizing and administration. 15 years experience. Presently engaged mid-west. Desires change to far west or west coast. PW-4517, Engineering News-Record.

Construction Executive or Field Superintend-ent 32 years experience, 15 years Area, Field Superintendent one Major Steel Erection Company all supervision, Bridges, Industrial, Commercial Buildings, Churches. Seek permanent connection. Available 30 days notice. PW-4519, Engineering News-Record.

General Contracting connection sought by C. E. with vast experience building and heavy construction most all types and phases of work of large magnitude. Available now. PW-4609, Engineering News-Record.

Construction Superintendent—Civil Engineer; experienced on various sized projects. Desire position with challenge and opportunities. PW-4620, Engineering News-Record.

Field Office Manager currently with heavy construction company wants permanent connection. Experienced as paymaster, purchasing agent, labor relations, cost control, etc. Will relocate. PW-4611, Engineering News-Record.

Surveyor Reg. Draftsman, graduate, C. E. Reg. Archit. Engineer age 63. Frank Spayth, 2117 Lexington, Springfield, Ohio.

Graduate Civil Engineer. Age 29. Diversified background; Project Engineer—Industrial Construction, Concrete & Structural Steel Design, Municipal Sanitation, estimating. Can organize and expedite. PW-4617, Engineering News-Record.

Structural—Architectural designer, drafts-man, estimator. Age 27, B.S. degree, veteran, 6 yrs. varied experience on industrial & commercial type buildings, hydro electric projects, etc. Prefer to locate in lower Mid-Atlantic or South with progressive consultant, architectural firm, contractor or industrial firm. Resume upon request. PW-4618, Engineering News-Record.

Estimator General Contractor complete han-dling, quantities bidding, purchasing, all phases to final payment ten years present connection—desire change as Chief Estimator. PW-4623, Engineering News-Record.

Estimator. Reg. P.E. 25 years background in the const. field. Estimating, Quantity Surveys, Bidding, Buying, Sub-contractor Coordination, to supervision all types construction Management Capacity. PW-4627, Engineering News-Record.

Graduate Civil Engineer. Ten years construc-tion experience field & office work. Desire position as estimator with general contractor. Can handle complete job from take-off, pricing, purchasing & expediting. Prefer Mid-West but will consider other locations that offer good future. Reply PW-4629, Engineering News-Record.

Field Engineer Heavy Construction, experi-enced in both railroad maintenance and heavy construction Civil Engineer graduate, age 49, PW-4590, Engineering News-Record.

Project Manager or Chief Estimator 25 yrs. experience in all phases of Industrial, Commercial and Institutional work including Gov't. Contracts. Location—Texas, Arizona, Louisiana preferred. Age 53—Permanent—Excellent References. PW-4602, Engineering News-Record.

Civil Engineer. Long experience Construction Supervision of sewage and water plants, tunnels, piers, bulkheads, bridges and industrial buildings. PW-4597, Engineering News-Record.

Civil Engineer, 26. Very good background. Perfect knowledge of Spanish. Engineering experience in Argentina and U.S.A. interested construction field work in Argentina, Uruguay, Chile or Brazil. Immediate availability. PW-4599, Engineering News-Record.

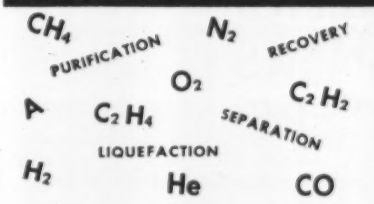
Earthwork Superintendent: Heavy Construc-tion, qualified, Experience, Superhighways, levees, cofferdams, field control, grading seeding, pile driving. PW-4647, Engineering News-Record.

Estimator—Take-off, Pricing, all trades sub-contr. in or near NYC Lic. P.E., 49, TU 2-5384 or SP 9-2347.

Building Const. Field Supt: Industrial, com-mercial, institutional, churches, etc. Similar position in field desired, 25 years exp. can travel. Age 55. PW-4645, Engineering News-Record.

ENGINEERS

are offered opportunity to advance professionally in diversified growth company



LOW TEMPERATURE PROCESSING

The Company is the leader in the engineering, design, manufacture and construction of plants and systems for the separation of gases such as Oxygen, Nitrogen, Carbon Monoxide, Hydrogen and other low boiling building blocks of the chemical industry. We must expand the entire organization to meet the increasing demands of the steel, metallurgical and chemical industries, and for national defense.

Selected Assignments

- Construction Engineers
- Estimating Engineers
- Operating Superintendents
- Field Operations Manager

AIR PRODUCTS, INC., situated in Eastern Pennsylvania at the foothills of the lovely Pocono Mountains, with ready access to three fine universities as well as other cultural and recreational facilities, offers you . . .

1. High professional salary scale.
2. Company paid advanced educational program.
3. Unusual medical and life insurance program.
4. Bonus and profit sharing opportunities.
5. Fine retirement plan.

At AIR PRODUCTS you will work with recognized leaders in the industry

Send resume in confidence to Mr. E. J. Strobel

Air Products
. . . INCORPORATED

P.O. Box 538 **Allentown, Pa.**

SENIOR ENGINEERS
(CIVIL—HIGHWAYS)
FOREIGN EMPLOYMENT

Engineers (2) with 15-25 years experience in highway design and construction supervision (including administrative background) required for responsible overseas position. Near East location. Liberal salary, transportation for family plus other attractive allowances and benefits. Send detailed personal history and experience record.

P-4566, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

BRIDGE & HIGHWAY ENGINEERS DRAFTSMEN

BROOKHART & TYO

Consulting Engineers

3501 N. Front St. **Harrisburg, Pa.**

POSITIONS AVAILABLE

FOR

ENGINEERS
DESIGNERS
DETAILERS

ON HIGHWAY, EXPRESSWAY, AND SANITARY ENGINEERING DESIGN IN OUR ST. LOUIS OFFICE

YOU WILL WORK WITH HIGHLY SKILLED ENGINEERS IN A PLEASANT ENVIRONMENT

Inquire as to overseas openings

Write fully to

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST., ST. LOUIS 1, MO.

Opportunities in Alaska

Resident Engineers

Top-quality men with broad experience in construction supervision, including buildings.

Chief Engineers

Structural **Mechanical**

Field Engineers

Architectural **Mechanical**
Electrical **Civil**
Soils and Concrete

Excellent salary—plus substantial overtime. Transportation and travel pay, paid vacation and sick leave.

Send complete information covering qualifications, past earnings, and availability.

METCALF & EDDY

1300 Statler Building, Boston 16, Mass.

Highway & Bridge Engineers
Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, West Virginia, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC.
BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

HIGHWAY ENGINEERS
BRIDGE DESIGNERS
DRAFTSMEN

Several years experience in highway or bridge design preferred but not essential if educational background and engineering experience is good.

This firm of Consulting Engineers is anxious to employ men who are interested in an opportunity to work on large scale highway projects in the Philadelphia area.

Excellent working conditions. Liberal employee benefits.

ALBRIGHT & FRIEL INC.
3 PENN CENTER PLAZA
PHILADELPHIA 2, PA.

MAINE

Three permanent positions, Civil or Mechanical Graduates.

Good Churches, Schools, Outdoor Recreation, Liberal Vacation, Pension, Paid Up Life Insurance, Sick Leave. Salary approximately $5,600.00.

Engineering Department, Bangor and Aroostook Railroad, Houlton, Maine. Tel. 2213

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Nieml, Personnel Manager.

HARZA ENGINEERING CO.
400 W. Madison St. Chicago 6, Ill.

State of California Needs
WATER POLLUTION CONTROL ENGINEERS

To survey water pollution sources and investigate sewage and industrial waste operations.

Four years' experience, including supervision & Public contact, in treatment of sewage and industrial wastes, engineering degree, and eligibility for California engineer's license required. Starting salary $584 or $676 depending on qualifications.

Write immediately to:

C. S. WARNER
Supervisor, Engineering Recruitment Unit
STATE PERSONNEL BOARD
801 Capitol Ave. Sacramento 14, Calif.

ASSISTANT
LABOR RELATIONS
MANAGER

Excellent opportunity for personal growth in a leading engineering and construction organization. Requires college graduate with extensive experience in construction of refineries, chemical and power plants. Must be versed in all ramifications of labor contracts, rules, regulations and practices, particularly with the building trade crafts.

All inquiries in confidence. Please send complete details, including salary requirements.

P-4489, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

HIGHWAY ENGINEERS

DESIGNERS, DRAFTSMEN, SURVEYORS

Experienced men, continuous and progressive opportunities as Project Engineers, Group and Squad Leaders. Long range Interstate and Expressway Program.

ROBERT W. LOWRY, INC.
227 Pine St. Harrisburg, Pa.

SUPERINTENDENT BUILDING CONSTRUCTION

Top flight man by growing company operating nationally. Give all pertinent data in reply including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

WANTED—BRIDGE DESIGNERS

Graduate Engineers

With a Minimum of Three Years Design Experience
Permanent Positions, Liberal Employee Benefits
Salary $6500 to $8000

Apply—W. A. Warrick
JOHN CLARKESON—CONSULTING ENGINEER
Room 203, D&H Building Albany, New York

McKEE NEEDS

- Structural
- Concrete
- Piping
- Mechanical

ENGINEERS

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make full use of your talents, with excellent prospects for promotion to supervisory, staff and executive posts.

Broad diversification of work in our three engineering divisions assures you *permanent* security of employment.

You can build a strong foundation for your future with McKee. For complete information on the McKee organization and the extra benefits this company offers you write for our folder "The Key to Your Future" or contact us by telephone.

Telephone TOwer 1-2300, Cleveland, Ohio
or write to Edward A. Kolner
Arthur G. McKee & Company
2300 Chester Ave., Cleveland 1, Ohio

Arthur G. McKee & Company
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

ESSO EXPANSION PROGRAM

Provides Opportunities

in

COST ENGINEERING

Career positions available for graduate engineers in long range expansion program. Work involves technical aspects of cost estimating, development of estimating methods and cost analysis for all types of petroleum and chemical processing plants.

Excellent opportunities to learn many aspects of process and mechanical design while contributing to selection of optimum equipment for world wide expansion program.

High scholastic rating and ability to grow with organization particularly desired. Prefer one to five years engineering experience. Salary commensurate with experience and qualifications.

All inquiries will be considered promptly and held confidential.

Letter should give full details of education, experience, salary desired, availability date and references.

ESSO RESEARCH and ENGINEERING COMPANY

(Chief Technical Subsidiary—Standard Oil Company (New Jersey))

Esso Research Center
Employee Relations—C
P.O. Box 51 **Linden, N. J.**

HIGHWAY ENGINEERS
for work in
New Jersey and New York

Designers, draftsmen, chiefs of party, specification writers — submit complete resume stating education, experience, salary desired and date of availability to

P-4561, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEERS

Civil Engineers with or without experience in hydraulics, soils, concrete design, contracts estimating, dams or construction for work on flood control projects in Pennsylvania. Salary to $9000. State experience, salary requirements and references.

P-4228—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

BRIDGE & HIGHWAY

Designers, draftsmen, tracers, inspectors. Several permanent positions open with excellent opportunities.

FRANK L. EHASZ, CONSULTING ENGINEER
40-29 27th St. Long Island City 1, N. Y.

ESTIMATOR

Established Chicago organization wants an experienced man as an estimator, experienced in building and bridge work, with highway experience desirable; must be U. S. citizen and resident of Cook county; steady work; liberal pension and vacation plans. Write giving full particulars as to age, education, experience, and required salary.

P-4634, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

SOUTH DAKOTA DEPARTMENT of HIGHWAYS

Engineering Opportunities

Professional openings on the South Dakota Department of Highways staff present permanent opportunities for Civil Engineering graduates in the following classifications and salary brackets:

Structural Designer $5940-7020
Structural Draftsman . . . $5220-6240
Civil Engineers (Highway — Survey — Design — Construction—Drafting) . . . $4980-7020

Benefits include salary schedule, sick leave with pay, paid vacations, military leave with pay, available hospitalization plan.

For application forms, contact:
C. V. DOODY, Personnel Director
Department of Highways
Pierre, South Dakota

BOWATERS
SOUTHERN PAPER CORPORATION
and
BOWATERS
RESEARCH AND DEVELOPMENT INCORPORATED

South's largest and newest newsprint and pulp mills now receiving applications for the following permanent positions:

DESIGN ENGINEERS
PIPING ENGINEERS
PULP MILL ENGINEERS
MILL AREA ENGINEERS

Located in Eastern Tennessee Valley. Excellent recreational, residential facilities. Exceedingly favorable year around climate, near Chattanooga and Knoxville, Tennessee. Complete insurance, retirement, salary, and vacation programs. All applications treated in confidence. Reply immediately submitting summary of experience to:

BOWATERS
SOUTHERN PAPER CORPORATION
Industrial Relations Department
Calhoun, Tennessee

CLASSIFIED

SEARCHLIGHT SECTION

ADVERTISING

BUSINESS OPPORTUNITIES

EQUIPMENT - USED or RESALE

UNDISPLAYED RATE:

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS $2.10 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE:

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW Ads or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. April 4th Issue Closes March 25th.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

REPLIES (Box No.): Address to office nearest you
c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

SPECIAL SERVICE

Contract Disputes and Public Relations Service offered for Contractors—Owners—Security Companies—Backed by many years experience in construction and negotiation of contracts. 88-4506, Engineering News-Record.

BUSINESS OPPORTUNITY

Construction Engineer with $10,000 seeking Engineer or experienced Supt. with equal amount to invest in proposed new Construction Co. to operate in South East, with home office to be in Alabama. BO-4619, Engineering News-Record.

PART TIME WORK WANTED

Estimator—own office—will prepare quantity surveys for Gen'l. Contrs. & Eng'rs. L. Erickson, 359 N. Beach, Ormond Beach, Fla.

CONTRACT WORK WANTED

Structural Steel Detailing. Hip and Valley, checking by licensed Engineers. 30 years experience. Neatness-Speed-Accuracy. CWW-4514, Engineering News-Record.

WORK WANTED

Structural Steel Detailing, prompt service. Designed if requested. Harrison Engineering Co., P. O. Box 1688, New Orleans, La.

Design and Drafting Service to Contractors, Builders, Industry by Registered Architects. All types of buildings. Located in Northern Ohio. Reasonable rates. Free estimates. WW-4548, Engineering News-Record.

Structural Engineering problems? Complete Structural and Foundation Designs. Professional Caliber work. WW-4600, Engineering News-Record.

BUSINESS FOR SALE

Well established Soil and Rock Exploration business is offered for sale. This includes all equipment necessary for operation. If interested and want detailed information, call Independence 3-5000 before 5 P.M. and after: Myrtle 2-6881⅘. Ask for Mr. Silveri, or write

SILVERI DRILLING COMPANY
Box 177 Cold Spring Harbor, L. I., New York

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp*
Correspondence Courses HARVARD SQ. CAMBRIDGE MASS.

ASPHALT PLANT FOR SALE

Barber-Greene Model
839-840, 30-45 Ton Cap.

Write, wire, phone for details

CAPITOL EQUIPMENT, INC.
BOX 1076, TROY, N. Y.
Phone AShley 2-3703

DRAGLINE

LIMA 1201 with 85-ft. Boom, 3 Yd. Page Bucket, Cummins Diesel Engine. New 1950. Good Condition. PRICED TO SELL. F.O.B. Cars.

ANDERSON EQUIPMENT COMPANY
P.O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

FOR SALE
LIKE NEW 200 D REX PUMPCRETE
Complete with Pipe in Perfect Condition. Ready for Immediate Work.

G. A. COONEY
2128 Hudson Avenue, Chicago 14, Illinois
Financial 6-0456

WANTED

Used concrete batch plants

to meet Corps of Engineers specification. Capacity of 500 cub'c yards in eight hours, individual weigh batcher for all aggregates, automatic weighing and recording and two tilting type mixers, 2 yard capacity each.

Contact **E. V. LANE CORPORATION**
at P. O. Box 417, Palo Alto, California
Phone DAvenport 5-4495. Charles E. Greenamyer

WANTED—USED EQUIPMENT
IN GOOD CONDITION ONLY

Semi-automatic aggregate and cement batching plant (300 yds. in 8 hrs.)
35' Office Trailer: Euclid type trucks, 6-10 yds.
Orange Peel Bucket or Grapple
Bulldozer (TD-24, D-8, HD-20, 21, or OC-12)
Drag Line bucket (2-3 yds.)
P. O. Box 126, Wilmington, Delaware

WANTED
54B SHOVEL ATTACHMENT

For coal stripping shovel, long boom and sticks, complete with lagging chains, trip mechanism, etc. Must be in good condition. Priced right.

TESTA BROS., INC.
Richmond Road Bedford, Ohio
Telephone BEdford 2-5151

FOR RENT
BARE OR FULLY OPERATED

Model 2460 Gradalls-Diesel up & down. Bay City & Insley Truck Cranes—10 to 45 ton with up to 150 ft. of Boom

Cleveland Trenchers-Model 95 & 140 and Cleveland Backfiller-Tamper Model 80—All Diesel Powered.

BUCKS COUNTY CONSTRUCTION CO.
Penndel, Pa. Skyline 7-3795

FOR RENT
2 EUCLID TS-24 SCRAPERS
$30 an hour each or 15¢ a yard

Will rent for 6 months to 3 years. My brother and I will operate them. Reply immediately if interested to.

VERNON PEDERSON
Weldon Rt. Wolf Point, Mont.

Plymouth 35-ton locomotive, std. ga., gas.
Lima 1201 crane-shovel-dragl., 3½ yd. diesel.
Browning 35 ton elec. Whirley gantry crane.
Euclid diesel trucks; 2-Koehring Dumptors.
Johnson concrete batching & mixing plants.
Walking draglines, Bucyrus-Monighan, Page (7).
Shovels, cranes, draglines, 1½ to 12 yds.
Truck cranes, Lorain 20 ton, Lima 25-ton.

H. Y. SMITH CO.
828 N. Broadway Milwaukee 2, Wis.

FOR SALE—ROTARY TYPE DRILL

Model 1500-S failing. Dismantled as follows: Drill rig: LWH 22' x 8' x7'6". (1 skid). Mast sections, railings, etc.: 21'6" x 8" x 4" base 3" x 2'9" x 2'6". Truck, platform 14' Marmon Harrington 190" W.B. model 630-4. Including approximately $10,000.00 worth of new parts & accessories. Location Denton, Maryland.

FS-4633, Eng. News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N. Y.

Your inquiry will have Special value . . .

If you mention this magazine, when writing advertisers. Naturally, the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertisers wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

ROAD ROLLER: 5 ton Tandem, gasoline.

BATCHING PLANT: 3 compartment Bins 200 ton capacity, 100 bbl. cement compartment, Bucket Elevator, Cement Screw, 1200 bbl. Cement Bin, complete with motors, etc.

OVERHEAD ELECTRIC TRAVELING CRANE: 10 ton capacity, 56' span, 3 motor, 230 volt, D. C.

TRUCK CRANE: Lorain T20 complete with crane boom, shovel front and backhoe.

DRAGLINE: P & H 2½ yd., 90 ft. boom.

BRIDGES: Deck Girder Type: 2 Girders each, 44 ft., 54 ft., 65 ft. and 75 ft.

TRACKMOBILE: Whiting type TM322, standard gauge.

CLAMSHELL BUCKET: Williams 1¼ yd. capacity. Excellent condition.

LOCOMOTIVES: G. E. 13 ton, trolley type, 36" gauge, 250 volt. One 15 ton, 42" gauge. Whitcomb 10 ton, 36" gauge, battery type.

MUCKER: Conway model 75.

CRUSHING EQUIPMENT: Jaw Crusher 25 x 40, roller bearing, with 36" x 12 ft. Feeder with motor and drive.

ROD MILL: 4' x 8' wet grinding peripheral discharge with 50 H.P. motor and control. NEW condition.

BALL MILLS: Allis Chalmers Compeb Mill 7' x 24 ft., 500 H.P. motor. Hardinge 8' x 48" Conical Mills, 200 H.P. motors.

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300 - 3-8301

SAVE THOUSANDS!

UNUSED 6x6 ARMY TRUCKS

*2½-TON, GMC & INTERNATIONAL

- From Government Storage!
- Unused and Guaranteed!
- Factory-New Condition!
- Reconditioned trucks also available!

Why invest in expensive new trucks and equipment needed to get the roughest off-road jobs done when you can save up to $3,000 on ONE truck alone—and get the job done right!

Compare our tandem axle trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere. See for yourself how TWO of our trucks cost you even LESS than one new truck!

If planning to buy a truck, get in touch with us right away. There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, wire or phone COLLECT—JAckson 5-7841
Milton Y. Toombs, Jr. Sales Manager

MEMPHIS EQUIPMENT CO.
Construction and automotive equipment and parts
766 S. THIRD ST. • MEMPHIS, TENN.

BARGAIN
SHOVEL & DRAGLINE

P&H Model 955 Combination

Shovel Boom 28', Sticks 22', 2 Yd. Dipper. Drag Boom 65', New 2 Yard PAGE Bucket, Waukesha Diesel Engine. Machine New 1948, and never worked over 40 hours any week. PRICE.....$25,000.00

ANDERSON EQUIPMENT COMPANY
P.O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

FOR SALE
DELIVERED FROM STOCK

842 tons reinforcing steel 7¢—
82,000 bags of cement $1.10 a bag
New concrete deformed bars
ASTM A305-53T

⅝" thru 1¼", 30 to 40'. 732 tons FOB Norfolk, 110 tons FOB Savannah. Cement ASTM C-150-55, type I, manufactured January '57. R. W. Hunt certificate. Orders 200 bag and up. $1.10 aboard your carrier FOB Palm Beach, Florida. PR 5-6638 New York, LO 3-4081 Norfolk.

FS-4557, Engineering News-Record, Class.-Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FAIRLEADS

MANITOWOC Model 2000—3000 and 3500. Also Booms. PRICED RIGHT.

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

UNIT 357 Self Propelled ½ CU. YD. SHOVEL

CHRYSLER IND GASOLINE POWER
11.00 x 20 12 PLY TIRES **$7,900.**

EDWARD EHRBAR, INC.
29 Meserole Ave., Brooklyn 22, New York
EVergreen 3-5800

COMPRESSOR DIRECTORY
World's Best Rebuilts

25 CFM	2000 psi Ingersoll Model 3321 New
48 CFM	3500 psi Ingersoll
60 CFM	Worth. or Ing. Portable (3)
75 CFM	Worth. or Smith Portable (4)
105 CFM	Worth. or Ing. Portable (7)
105 CFM	LeRoi (diesel) Portable (1)
125 CFM	Worth. Portable (3)
137 CFM	100 psi 7 x 7 Ing. ES-1
210 CFM	Worth. Portable (3)
277 CFM	100 psi 8⅛ - 4½ x 5 CP-PE4
315 CFM	Worth. or Jaeger (diesel)
434 CFM	Vacuum 14 x 7 Worth.
545 CFM	100 psi Allis Chalmers.
552 CFM	100 psi 13-8 x 12 Ing. XRB
600 CFM	Chicago Portable—Rotary
600 CFM	Worth. Portable—Reciprocating
660 CFM	100 psi 15-9½ x 12 Worth.
720 CFM	Vacuum 18 x 7 Worth. HBV
868 CFM	100 psi 17-10½ x 14 Ing. XRB
868 CFM	100 psi 17-10 x 12 Chicago OCE
1600 CFM	40 psi Fuller Rotary C-300
1721 CFM	100 psi 23-14 x 16 Ing. PRE-2
5748 CFM	50 psi 29-29 x 21 Ing. PRE-1
625 HP—3-60-2300 syn.	

American
AIR COMPRESSOR CORP.
DELL AVE. & 48th ST., NORTH BERGEN, N. J.
Telephone UNion 5-4848

FOR SALE

1—Manitowoc 4500 Dragline with Cat Diesel Engine, 100 Ft Boom

1—25 Ton Ohio Model E Diesel Locomotive Crane

1—20 Ton Bay City Truck Crane

HENNESSEY-FORRESTAL MACHY. CO.
2323 So. Hanley Rd. St. Louis 17, Mo.

FOR SALE OR RENT

1—Manitowoc Model 3500 Diesel Crane, 100' boom, 30' jib, Caterpillar D-17000 engine, 60-ton capacity. Thoroughly rebuilt.

1—Model 820 Lorain Crane, serial #18221, 90' boom, capacity 2 yards, 6-cyl. D-13000 Caterpillar diesel engine. Thoroughly rebuilt.

1—Ferguson "112" double-roll Sheepsfoot Roller. Dia. of rolls 40", width 48", 112" per section. Weight empty 6,340#. Weight with ballast 10,200#.

1—Tampo Pneumatic-Tired Roller Model R13, with 13 pneumatic tires, size 7.50x15. Rolling width 84". Weight empty 3500#. Weight with ballast 28,000#.

Complete Jet Crete outfit: Model 240 CMC Jet Crete, 6 cu. ft. Mixer, trailer-mounted.

1—100 KW Ideal AC Generator, 127/220/230/400/-440 volt, 3 Ph., 50 or 60 cycle, with Hercules DNX diesel engine, skid mounted. Weight 16,170#.

2—Tandem Rollers: 1 Austin Western 5-8 ton variable weight, diesel powered, hydraulic steering. Thoroughly rebuilt. 1 Buffalo-Springfield 8-ton, gas. powered, mechanical steering. Good operating condition.

2—Buckeye Mdl 12 Trenchers: 1 diesel powered; 1 gasoline powered. Max. digging width 24", depth 5½'. Thoroughly rebuilt.

PILE DRIVING EQUIPMENT

2—#1 Vulcan Hammers with standard base

5—#2 Vulcan Hammers: 2 with McDermid base 3 with standard base

McKiernan-Terry Hammers: 11B3, 10B3, 9B3, 9B2, 7, 6, 5, 3, and 1.

Write for New Stock List No. 456

Equipment Corporation of America

CLIFTON HEIGHTS, PA., Box J—608, Sub of Phila. MAdison 6-2200
GROVETON, PA., Box 43-J, Sub of Pittsb. FEderal 1-2000
CHICAGO 4, ILL., 327-J So. La Salle St. WAbash 2-4681
NEW YORK 7, N. Y. 30-J Church St. WOrth 2-0036

TRUCK MIXERS

2—REX 3 Yd. Horizontal.....$1,250.00 Each
2—JAEGER 3 Yd. Horizontal....$1,250.00 Each
2—REX 3 Yd. Horizontal, mounted on White Trucks.....$2,500.00 Each
All above are 1949 machines and in good condition.
2—4½ Yd. JAEGER Mixers, with Jacks. 1953 Machines. Condition Excellent
PRICE.....$4,000.00 Each

ANDERSON EQUIPMENT COMPANY
P.O. Box 1737, Pittsburgh 30, Pa. Phone LEhigh 1-6020

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8"	BP	36#
10"	BP	42#
12"	BP	53#
14"	BP	73#
14"	BP	89#
14"	BP	102#
14"	BP	117#

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
52-25 2nd Street
Long Island City, N. Y.
Phone: RAvenswood 9-1262

FOR SALE or RENT

30 ton Browning Diesel Loco. Crane. 1947.
65 ton Gen. Elec. Diesel Elec. Loco.
10 ton Plymouth Diesel Locos. Std. Ga. 1949.
30 ton Wiley Stiffleg Derrick 80' Bm.
140 HP Amer. 3D. #140 Diesel Hoist & Swinger.
30 ton American #2 Guy Derrick. 90' Bm.
¾ yd. Lima #34 Diesel Crane. 90' Bm.
1½ yd. Northwest #6 Diesel Crane. Built 1949.
1600 ft. Joy Elec. Air Compressor 300 HP. New 1951.
60 ton Manitowoc 3900 Erection Crane. Rent.
100 HP Lucey Portable Boilers. 200# WP.

MISSISSIPPI VALLEY EQUIPMENT CO.
Railway Exchange, St. Louis 1, Mo.

USED TANK TRAILERS
For Sale or Lease

New York Area—40 single axle and tandem axle gasoline, fuel oil, asphalt and LPG trailers with capacities from 4000 gallon up. Priced from $600.00. Write, wire or phone Butler Manufacturing Company, Suite 602, 103 Park Avenue, New York 17, New York. Telephone MUrray Hill 3-9473.

Chicago Area—25 tandem axle gasoline, fuel-oil and LPG trailers with capacities from 5200 gallon to 7900 gallon. Priced from $2000.00. Write, wire or phone Butler Manufacturing Company, Suite 1110, 624 S. Michigan Avenue, Chicago 5, Illinois. Telephone WEbster 9-5035.

Minneapolis Area—30 tandem axle gasoline and fuel-oil trailers with capacities from 5400 gallon to 7900 gallon. Priced from $1600.00. Write, wire or phone Butler Manufacturing Company, 900 Sixth Avenue, S.E., Minneapolis 14, Minnesota. Telephone FEderal 3-8111.

Birmingham Area—18 single axle and tandem axle gasoline and fuel-oil trailers with capacities from 4000 gallon to 7400 gallon. Priced from $700.00. Write, wire or phone Butler Manufacturing Company, 931 Avenue "W", Ensley, Birmingham 8, Alabama. Telephone 6-5181.

LIQUIDATION SALE
Now Going On At

Jones Construction Co., Rt. 6, Columbia, Conn. Write or call Willimantic, ACademy 8-9440 or 8-9428.

One—820J Lorain Crawler Crane with shovel attachment actually worked 100 hrs. In excellent condition.

One—8" Marlow Pump with International Diesel Engine. Almost new.

Three—Ford Pickup Trucks

Concrete Curbing and Panel Forms, plus many small items too numerous to mention.

MIXER

65 WORTHINGTON on 2 Pneumatic Tired Trailer. 4 Cyl. LeRoi Engine, Power Loader and Water Tank. Excellent Condition.
PRICE.....$850.00

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

FOR SALE
DIESEL ELECTRIC LOCOMOTIVES
STANDARD GAUGE
25 - 35 - 40 - 50 - 65 - 75 - 100 tons
Write for Details

FRANK M. JUDGE & CO., INC.
7010 Empire State Building
New York 1, N. Y.

8½ YD. SMITH
TRUCK MIXER

Used as Demonstrator for short time. Excellent Condition.

Hodge & Hammond, Inc.
720 Garrison Avenue, Bronx, N. Y. C.
New York Phone—Kilpatrick 2-2400
New Jersey Phone—Market 3,5424

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge

GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

EUCLIDS
BOTTOM DUMP
6—MODEL 71FDT
4—MODEL 17FDT
1—MODEL 6FDT
1—MODEL 1FDT
PRICED TO SELL

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

DRAGLINES

2—4500 MANITOWOC—5 Yd.
2—1005 KOEHRING—3½ Yd.
2—1201 LIMA—3 Yd.

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave. New York, N. Y.
Reno, Nevada
Park Bldg. Pittsburgh, Pa.
Carnegie, Pa.

INTERNATIONAL TD24
1952 DIESEL TRACTOR
(Angle Type) Bullgrader DDPCU
Gear Driven 7 Roller Track Frame
Good Condition $15,500

EHRBAR EQUIPMENT COMPANY
U. S. Route 22 MUrdock 8-5000 Union, N. J.

RAILS - TIE PLATES
Frogs & Switches—Track Accessories

W. H. DYER CO., INC.
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

STEEL GRATING
FOR SALE
Large Lot of Used Irving Subway Grating
Bridge Type—2½" x 3/16" bars

BUILDERS IRON WORKS
Somerville, Mass. MOnument 6-2000

FOR SALE OR RENT
AMERICAN TRIPLE DRUM HOIST
AND ATTACHED SWINGER
Diesel—25,000 lb. Line Pull
Like New Condition

FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd. Long Island City 1, N. Y.

RAILROAD Cross and Switch TIES
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
29 East Madison St. Chicago 2

FOR SALE
HOUGH PAYLOADER
1952 model HMD with lights, 84" bucket.
To inspect contact

THE KENTUCKY STONE COMPANY
214 Fincastle Building Louisville 2, Kentucky

BUCKETS

2 Yd. R.C. PAGE Dragline.
2½ Yd. ESCO Dragline.
2½ Yd. HENDRIX Dragline.
PRICED TO SELL.

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

BOOMS

MANITOWOC Models 2000-3000 & 3500. Any length. Standard & Steel Erectors Type. Also Aluminum Tops for Draglines and Fairleads.

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

CRANES FOR RENT

CRAWLERS Capacities to 60 tons Booms to 180 ft.
TRUCK CRANES Capacities to 35 tons Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

CONTRACTORS TRUCKERS DRILLERS CRANE OPERATORS
READY-MIX TRUCKERS LOGGERS MINE OWNERS PIPE LAYERS
CONVERT YOUR Rubber-Tire EQUIPMENT
to CRAWLER PERFORMANCE
Save 50%-ACT NOW!
MUD — SAND — SNOW — SWAMPS won't stop you! Flotation is increased 500%, and Traction 300%. TRUCK TRACK fits small as well as large tire sizes. Prices for single axle sets as low as $240.00 and for Tandem Axle sets, $408.00 F.O.B. Cleveland, Ohio
Durable Drop Forged Steel Construction Interchangeable
TRUCK TRACK
QUICK and EASY to mount
Send for Literature and FREE ESTIMATE
TRUCK TRACK SALES COMPANY

FOR SALE OR RENT
STATIONARY MIXERS

4—28-S Ransome & Knickerbocker stationary mixers. Gasoline or electric powered. Complete accessories. Open-end skip or batch hoppers.

THOMAS HOIST CO.
20 S. Hoyne Ave. Chicago 12, Ill.

2—MICHIGAN 175A TRACTOR SHOVELS 1955

Waukesha Diesel Engine—Semi Enclosed Cab
16.00 x 24 Tires—Both in Good Condition

EDWARD EHRBAR, INC.
29 Meserole Ave., Brooklyn 22, New York
EVergreen 3-5000

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES
RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

TRUCK MIXERS

3—3 Yd. REX & JAEGER Horizontal. Good Condition ..... $1,250.00 Each
2—3 Yd. REX Horizontal on White Trucks ..... $2,500.00 Each
All New in 1948 & 1949

ANDERSON EQUIPMENT COMPANY
P. O. Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
94	MP-116	34 to 35 ft.	Wisconsin
101	MP-116	15 to 20 ft.	Iowa
75	MP-116	60 ft.	Chicago
110	MP-115	35 to 60 ft.	Kansas City
130	MP-116	35 to 45 ft.	Alabama
36	MP-115	60 ft.	Nebraska
175	MP-116	35 to 60 ft.	Kansas City

CONMACO
PHONE DRexel 1-3930
CONTRACTORS MACHINERY COMPANY
804 KANSAS AVE., KANSAS CITY, KANSAS

We do a Nation-Wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT
380 pcs. 60 ft Beth. DP-2—New York
292 pcs. 60 to 30 ft. Carn. M-116—Illinois
369 pcs. 60 to 30 ft. Beth. ZP-32—Maryland
490 pcs. 42 ft. Carn. M-116—Louisiana
244 pcs. 35 ft. Carn. M116—Wisconsin
290 pcs. 35 to 15 ft. Beth. AP-3—Ohio
190 pcs. 25 ft. Beth. DP-2—Massachusetts
Other Lengths & Sections at Various Locations

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

LOW COST INSTALLATION AND OPERATION
CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 to 20 TONS
SELL, RENT or BUY
FOR DAMS BRIDGES BREAKWATERS FILTRATION AND SEWERAGE PLANTS
FOR SPEED ECONOMY EFFICIENCY FLOOD SAFETY LABOR REDUCTION
AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

NEW "Z" SHEET PILING

Sizable Quantity *Immediate Delivery*
25 # Sq. Ft. S=15.8 per ft. of Wall
32.5# Sq. Ft. S=38.1 per ft. of Wall

TAYLOR-DAVIS CORP.
Ft. of Madison St. Wilmington, Del.
Olympia 8-7151

PIPE

Surplus New & Used
FOR SALE

STEEL SHEET PILING

400 PCS. CARNEGIE MZ32—60 FT.
600 PCS. CARNEGIE MP101—60 FT.
347 PCS. BETH. AP3—25 & 30 FT.
416 PCS. BETH. DP2—31' 37' & 50'
366 PCS. BETH. ZP32—25', 36' & 48'

PILING BOUGHT—SOLD—RENTED

15 x 24 PORTABLE CRUSHER

Model 15 A Diamond Crushing Plant, 15 x 24 Jaw Crusher, 30" x 8' Apron Feeder, Hopper 24" x 26' Conveyor, Gasoline Engine on Pneumatic Tires.

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates

H-BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER Co.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

PILING PILE FITTINGS • PIPE
CULVERTS • VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING
ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13 Sts., B'klyn, N. Y.
ALBERT PIPE SUPPLY APS

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO. INC
Bogart and Stagg Streets Brooklyn, N.Y.

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

STEEL SHEET PILING
780 PCS. LARSSEN 11—30' & 40'
294 PCS. BETH. AP-3—20'
PILE HAMMERS & EXTRACTORS
1 McKIERNAN TERRY E1 EXTRACTOR
VULCAN 800 EXTR.—McK. T. 983 HAMMER
STOCKS—NEW ORLEANS—TAMPA—JACKSONVILLE
SEABOARD STEEL CORP.
4521 South Tamiami Trail, Sarasota, Florida
Tele. Ringling 7-0461

(Additional Searchlight Advertising on following page)

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications

Boston New York

Metcalf & Eddy
ENGINEERS

Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Fort Lee Construction Co.
Engineers and Constructors

For modern, efficient, design and erection, commercial and industrial, reinforced concrete, structural steel and timber. Complete projects, from inception to completion, based on 25 years continuous successful experience.

Main office 248 Main street, Fort Lee, New Jersey. Telephone Windsor 4-7864.

Edwards, Kelcey & Beck
Consulting Engineers

Reports, Design Supervision
Subways, Expressways, Traffic, Parking
Harbor Works, Bridges, Tunnels
Housing and Industrial Developments

Newark, New Jersey
New York Philadelphia Boston

John Clarkeson
Consulting Engineer

Civil Engineers — Consulting Services

Highways, Airports, Bridges
Surveys, Waterfront Facilities

Albany and Watertown, N. Y.

E. Lionel Pavlo
Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

7 E. 47th St. New York 17, N. Y.

D. B. Steinman
Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction
Strengthening, Investigations.
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger
Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Avenue
New York 17, N. Y.

Lockwood, Kessler & Bartlett, Inc.
Engineers *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Kain and Hooven
Consulting Engineers

Civil—Structural—Industrial

Registered—Pennsylvania, Delaware, New Jersey
44 S. Lansdowne Ave., Lansdowne, Pa.

Robert W. Lowry, Inc.
Consulting Engineers

Robert W. Lowry M. Lepkahik
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
227 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Buchart Engineering Corp.
Engineers

Highways — Bridges — Toll Roads
Sewerages — Industrial Waste and Disposal — Water Works — Surveys — Reports — Design — Supervision — Consultation — Industrial — Municipal — Structures

611 W. Market St., York, Pennsylvania

Sprague & Henwood, Inc.
Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office
221 W. Olive Street, Scranton, Pa.

Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
1248 Church St., Decatur, Ga.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

SOUTH

Harry Hendon and Associates
ENGINEERS
(Formerly Polk, Powell and Hendon)

Harry H. Hendon L. E. Hoffmann
A. B. Jowers
Civil Engineers—Public Utilities
10 Office Park Circle, Mountain Brook
Birmingham 9, Alabama

Duval Engineering & Contracting Co.
General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville Florida

Rader and Associates
Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations.

111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Mobile Drilling & Engineering Inc.
Foundation Engineering & Testing Division—Contract Drilling Division

Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.
960 N. Penn. Ave., Indianapolis 4, Ind.

Toledo Testing Laboratory
Engineers—Chemists

Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory

1810 North 13th St. Toledo 3, Ohio

GEOLOGISTS

Geologic Associates
ENGINEERING GEOLOGISTS

Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling

1596 8th Ave. So — Nashville, Tenn.
9-1819 Phones 9-4462

INSPECTION & TEST

A. W. Williams Inspection Co.

Established 1921—Member A.C.I.I.
Inspection — Testing — Analyses — Supervision. Foundation Investigations, Soil Borings, Soil Mechanics, Concrete and Asphalt Design and Control, Radiography, Sampling, Calibrations, Timber and timber treatment inspections. Complete testing laboratory service.
Main Office: 308 Virginia St., Mobile, Ala.

Richardson X-Ray Service
a corporation

Field X-ray, Gamma ray Inspection of Penstocks, Pipelines and related welded structures.

World Wide Service

617 S. Raymond Ave. Alhambra, Calif.
Cu 3-1167

The Haller Testing Laboratories, Inc.

140 Cedar St., N. Y. 6, N. Y.

Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges

Complete Soils Laboratory

Test Borings—Load Tests

New York, N. Y. Boston, Mass.
Plainfield, N. J. New Haven, Conn.

SEARCHLIGHT SECTION

(Continued from preceding page)

RE-BUILT REPAIRS RENT REAL EXPERTS — ALL MAKES

BUFF

69 Day St., New York WOrth 2-3797

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NRL 73.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Filotecnica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1913
210 S. Canal St. Chicago (6), Ill.

SPECIALIZED REBUILDING
of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.
Distributors for Brunson Instruments
Hickerson Instrument Co.
8 Ninth Edmondson Avenue, Indianapolis 19, Indiana

GURLEY

FACTORY REPAIRS

Send your instrument directly to Gurley for repair, rebuilding, adjustment. Write for "Repair Service" leaflet plus 20-page "Surveyor's Notebook Tips."

W. & L. E. GURLEY
Dept. R, Troy, New York

ADVERTISERS IN THIS ISSUE

Acker Drill Co. 124
Allied Steel & Conveyors Div. Sparton Corp. 154
Aluminum Co. of America 137
American Bitumuls & Asphalt Co. 147
American Bridge Div., U. S. Steel Corp. ... 98
American Foreign Insurance Assn. 67
American Hoist & Derrick Co. 129
American Manganese Steel Div. 119
Arkwright Finishing Co. 123
Armco Drainage & Metal Prod., Inc. ...96, 97
Armstrong Cork Co. 153
Austin Western Co. 132

Belmont Iron Works 152
Best Co. 146
Bethlehem Steel Co. 148
Bituminous Casualty Corp. 156
Blaw Knox, Equip. Div. 49
Blaw Knox Co. Grating 107
Briggs & Stratton Corp. 17
Bruning Co., Inc., Charles 103
Bucyrus-Erie Co. 31
Buda Div. Allis-Chalmers Mfg. Co. 145
The Buffalo Springfield Roller Co. 139
Byers Co., A. M. 85

Case Foundation Co. 143
Caterpiller Tractor Co. 57
Celotex Corp., The 106
Cen-Vi-Ro Corp. 170
Chevrolet Motor Div., General Motors 72
Clark Equip. Co., Const. Machy. Div. ...36, 37
Clearprint Paper Co. 15
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. 69
Columbia-Southern Chem. Corp. 43
Commercial Shearing & Stamping Co. 157
Committee on Steel Pipe Research 86, 87
Concrete Grinding Corp. 66
Concrete Reinforcing Steel Institute 115
Connors Steel Div., H. K. Porter Co. 111

Dicalite Div., Great Lakes Carbon Corp. .. 128
Dodge Corp., F. W. 113
Dudgeon, Inc., Richard 146
Dur-O-Wal 144

Eastman Kodak Co. 91
Economy Forms Corp. 156
Enjay Co., Inc. 117
Erie Strayer Co. 83

Faber-Castell Pencil Co., A. W. 162
Fenestra, Inc. 104, 105
Fennel Instrument Corp. of Amer. 40
Flynn Mfg. Co., Michael 38
Frederick Iron & Steel Corp. 134

Gar Wood Industries, Inc. 64, 65
General Electric Co. Electronics 155
Georgia-Pacific Plywood Co. 175
Goodyear Tire & Rubber Co. 22
Greenlee Tool Co. 56
Griffin Wellpoint Corp. 138
Gunite Concrete & Construction Co. 152

Hamilton Rubber Mfg. Corp. 60
Hazard Wire Rope Div., Amer. Chain & Cable Co. 9
Hendrick Mfg. Co. 124
Hewitt-Robins Ind. Div. 84
Hough Co., Frank G. 100

Illinois State Toll 136
Imperial Pencil Tracing Cloth 126
Ingersoll Rand Co. 12, 13
International Harvester Co. (Trucks) ...71, 72
Ironite Co. 109
Irving Subway Grating Co. 94
Irvington Form & Tank Corp. 138

Jersey Bolt & Spike Corp. 136

Kern Instrument Co. 16
Kinnear Mfg. Co. 156
Koehring Co., The 6, 7
Koppers Co., Inc. 135

Le Roi Co. 131
Leschen Wire Rope Div., H. K. Porter Co., Inc. 110
Le Tourneau-Westinghouse Co. ..75, 77, 79, 81
Lone Star Cement Corp. 24
Lufkin Rule Co. 152

Mack Trucks, Inc. 142
Macomber, Inc. 166
Mall Tool Div. of Remington Arms Co. 165
Manitowoc Engr. Wks. 163
Masonite Corp. 101
Master Builders Co. .....3rd Cover
Mayo Tunnel & Mine Equip. Co. 146
McKiernan-Terry Corp. 126
McKinney Drilling Co. 146
Moretrench Corp. 152
Morris Machine Wks. 68
Mueller Co. 125
Murphy Diesel 1

National Supply Co., Ind. Prod. Div. 74
Northwest Engineering Co. 3

Pacific Coast Engineering 11
Penn Metal Co., Inc. 92
Pennsylvania Drilling Co. 162
Phoenix Bridge Co. 162
Pioneer Engineering Works 41
Pittsburgh-Des Moines Steel Co. 63
Frederick Post Co. 114

Quaker Rubber Div. H. K. Porter Co. 112
Quick Way Truck Shovel Co. 120, 121

Ramset Fasteners, Inc. 80
Raymond Concrete Pile Co. 176
Republic Steel Corp. 44, 45
Richmond Screw Anchor Co., Inc. 102
Robertson Co., H. H. 42
Roebling's Sons Corp., John A. 127
Ryerson & Sons, Inc., Jos. T. 20

Signode Steel Strapping Co. 95
Smith Co., S. Morgan 108
Smith Engineering Works 19
Socony Mobil Oil Co. 52, 53
Solvay Process Div., Allied Chem. & Dye Corp. 143
Spencer, White & Prentis, Inc. 55
J. S. Staedtler, Inc. 90
Standard Steel Corp. .....2nd Cover
Standard Steel Spring Div., Rockwell Spring & Axle Co. 149
Stang Corp., John W. 88
Steelcraft Mfg. Co. 78
Stoody Co. 158, 159
Stow Mfg. Co. 10
Symons Clamp & Mfg. Co. 2

Tapecoat Co. 16
Texas Co. 4, 5
Thew Shovel Co. 18
Timber Engineering Co. 172
Timken Roller Bearing Co. .....4th Cover
Turner-Halsey Co. 150, 151

U. S. Pipe & Foundry Co. 140, 141
U. S. Rubber Co. 122
United Steel Fabricators, Inc. 116
Universal Form Clamp Co. 35

Vascoloy-Ramet Corp. 76
Vibro Co. 14
Visking Corp. 160
Vulcan Iron Works 134
Vulcan Materials Co. 8

Waukesha Motor Co. 118
Wheeling Corrugating Co. 173
White Motor Co. (Auto-Car Div.) 58, 59
Winpower Mfg. Co. 149
Wrought Washer Mfg. Co. 82

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member

Number of copies of this issue printed 76,194

D. S. ROBERTSON, Advertising Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES
New York 36—330 W. 42 St.
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.
L. H. Hunt, W. G. Payne
J. A. Shipley

San Francisco, 4—68 Post St.
I. W. Otterson, R. C. Alcorn

Philadelphia, 3—17th and Sansome Sts.
D. G. Jensen, D. L. Kates

Cleveland, 15—Hanna Bldg.
F. P. DiToro, E. B. Mingle Jr.

Detroit, 26—Penobscot Bldg.
J. A. Houghton

St. Louis, 8—Continental Bldg.
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.
D. C. Billian

Dallas, 1—Vaughn Bldg., 1712 Commerce St.
G. Jones

Pittsburgh, 22—919 Oliver Bldg.
M. Russell

OTHER SALES OFFICES:
Boston, 16—350 Park Square Bldg.
London, McGraw-Hill House

A Gem From the Oratory

Engineers' week has come and gone again, and the newspaper clippings keep coming on speeches, awards and special events nearly everywhere, which were intended to bring public recognition to the engineer and his work.

Of all the reports received on these local programs, the one we liked best told of the speech made in Baltimore by a Glenn L. Martin vice president, an engineer himself. Said George S. Trimble, Jr.:

"We have no warmth. We aren't people to America, we are a commodity. Only people mature, commodities do not." Speaker Trimble went on to bemoan that engineers are to be found neither in the President's cabinet, nor in the newspapers' comic strips—two examples of omission that seem less than tragic to us. But he made good sense in his major thesis that the engineer is not fully appreciated, as he went on to advise:

"We must teach the public the human side of engineering. That we are engineers because it is fun . . . and we are engaged in an adventurous search for more knowledge and better answers to any and all problems." That seems good advice to follow.

Fresh Water From Salt

Recent field test cost data for the electric membrane, or ion exchange, process of demineralizing saline waters (ENR Feb. 14, p. 59) are gratifying indication of progress being made in reducing costs.

They show that from brackish waters (dissolved salts between 1,000 and 5,000 ppm) fresh water containing 500 ppm can be produced at a cost between 42 cents and $1.00 per 1,000 gal. In rough comparison, cost of water to municipal customers in the U.S. in 1950 averaged 20 cents per 1,000 gal, while Dallas and Oklahoma City charged 42 and 35 cents, respectively, in that year. The comparison is rough because the municipal figures include distribution system costs, but it should be noted that the relatively high price of water in Dallas and Oklahoma City is due primarily to high transmission-from-source costs—the feature that demineralization avoids.

The ion exchange process is, of course, only one of many processes for salt water conversion, and a relative newcomer among them. It appears suitable only for brackish waters, since costs rise rather directly with amount of salinity.

Multiple-stage distillation now is the leading process for demineralizing seawater containing dissolved salts up to 40,000 ppm. Recent plants of this type can produce potable water at costs ranging between $1.75 and $2.80 per 1,000 gal. And if scale formation, which impedes heat transfer, can be eliminated, leading authorities predict that a 20-stage still, utilizing exhaust steam from a thermal power plant, could convert seawater for as little as 30 cents per 1,000 gal.

It is readily apparent that, at present, potable water from either brackish or seawater sources is not competitive with municipal supplies from fresh water sources. Yet the cost breakthrough in brackish water conversion by the ion exchange process could make it competitive, right now, for a U.S. community which has to go a long distance for suitable fresh water, but has brackish water nearby.

Regardless of process employed, the day when fresh from salt conversion units appear in places other than where fresh sources are non-existent appears not far off. This is due to current intensive research efforts on the part of public agencies—particularly the Interior Department with its grant program under its Office of Saline Water—and private companies, one of which is responsible for the electric membrane work discussed herein. Their efforts deserve applause because water is the fuel of progress.

Public Relations on Roads

Delegates attending the recent annual meeting of the Association of Highway Officials of the North Atlantic States (ENR Mar. 7, p. 25) constantly heard repeated a bit of advice that should be heeded by every man and every governmental department concerned with highway work. Bluntly and in no uncertain terms, the officials were warned to improve their public relations or expect trouble.

It is understandable that state officials, concerned with what they feel are the important problems of highway work, should view with impatience the need for prior public approval of their work. Conscientious road men are properly certain that their efforts are in the best interests of the majority. Too often, therefore, they are prone to regard all objections as nothing more than the noisy work of a selfish minority.

It is true enough that most objections to highway programs do come from small groups with axes to grind. But it is also true that a militant minority can often overrule a dormant majority—as many a legislative victim of a determined lobby can testify. And of course minority groups also have the right to be heard and are due all possible consideration.

The scope of the federal highway program is so great that it will tax the energies and capabilities of every man and every agency concerned. There is no time to waste in fighting an irate populace. Highway officials therefore should study the public relations problem seriously and then make plans for an effective program as carefully as they lay out new designs—consult experts, employ trained personnel.

No highway project is going to make everyone happy, but good public relations can go a long way toward minimizing the complaints.

for the world's first circular office building...

architect-engineer specifies POZZOLITH to get better quality concrete

Here, as in many other architectural concrete buildings constructed since 1932, Pozzolith was employed to help avoid honeycombing and other segregation defects. A better surface was obtained because of improved cohesiveness and plasticity...even when water was substantially reduced.

Other concrete requirements are also met best with Pozzolith. This is because Pozzolith with its adaptations is key to the control of:

1. ***Water content***...makes possible lowest unit water content for a given workability.
2. ***Entrained air***...provides optimum air content without sacrificing other desired qualities.
3. ***Rate of hardening***...gives desired handling and finishing time under widely varying job conditions.

Any one of our more than 100 skilled field men will be glad to demonstrate the full benefits of Pozzolith for your project, and to advise of the availability of Pozzolith Ready-Mixed Concrete through more than 1000 qualified producers.

Capitol Records Office Building, Hollywood, California
Architect-Engineers: Welton Becket, F. L. A. A. and Associates, Los Angeles
Structural Engineers: Harvey Kirk Association, Los Angeles
General Contractor: C. L. Peck, Los Angeles
Pozzolith Ready-Mixed Concrete Supplied by
Transit-Mixed Concrete Co., Pasadena

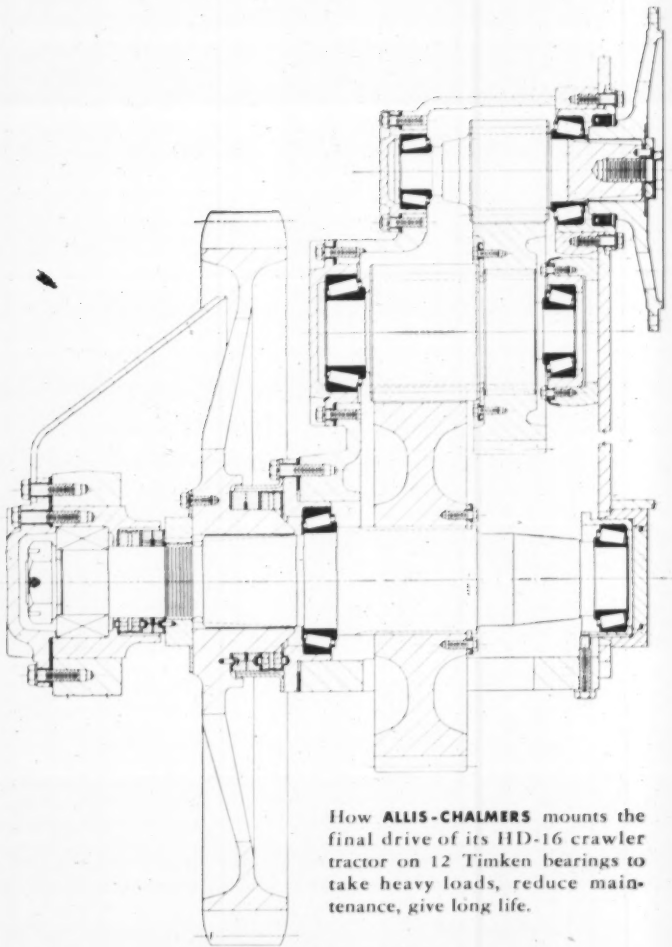
THE MASTER BUILDERS CO.

Division of American-Marietta Company

Cleveland 3, Ohio—Toronto 9, Ontario

Cable Address, Mastmethod, N. Y.

How Allis-Chalmers gears up its HD-16 crawler tractor for the big push



How **ALLIS-CHALMERS** mounts the final drive of its HD-16 crawler tractor on 12 Timken bearings to take heavy loads, reduce maintenance, give long life.

ALLIS-CHALMERS designed this rugged HD-16 crawler tractor with plenty of *push* for tough jobs—bulldozing, backfilling, logging and other earth moving jobs. And they designed it with features to give it extra *sales* push, too. One big feature is its Timken® tapered roller bearings. These Timken bearings easily take the terrific loads from push-and-pull clearing, loads that go through all the gears in the HD-16's final drive assembly mounted on Timken bearings.

Timken bearings take both radial and thrust loads in any combination. Their tapered construction does it. And because of full line contact between their rollers and races, Timken bearings have extra load-carrying capacity. They hold gears in rigid alignment. Gears mesh more accurately—gear wear is reduced. And Timken bearings practically eliminate friction because they're geometrically designed to have true rolling motion—precision-made to live up to their design.

And when heavy shock loads occur Timken bearings can take them, too. Their rollers and races are case-carburized to have hard, wear-resistant surfaces over tough, shock-resistant cores. The HD-16 works harder, with minimum maintenance.

To assure finest bearing quality, we even make our own steel. No other American bearing maker does. So for your No. 1 value in bearings, look for the trade-mark "TIMKEN" on every bearing. It builds your product's value. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD